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THE IRON AGE

THE NATIONAL METALWORKING WEEKLY May 11, 1950

NIV. OF MICHIGAN
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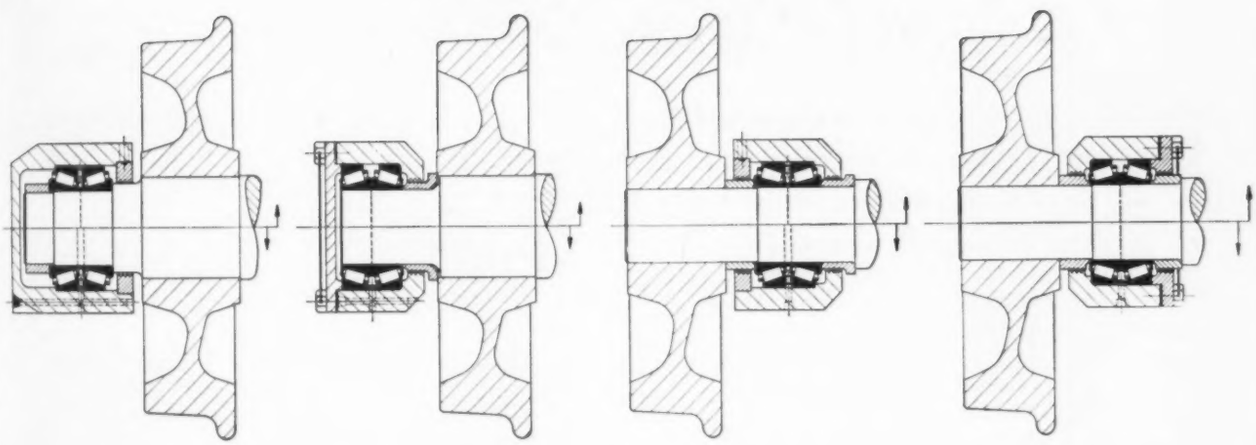
Four ways to cut ingot car maintenance costs...with TIMKEN® bearings



WHICHEVER of these typical Timken® bearing ingot car applications you choose, you can be sure of extra operating advantages and a minimum of maintenance. Timken bearings keep cars rolling smoothly, reduce starting resistance 88% of that of friction bearings. Thrust washers or thrust bearings are unnecessary. Axle wear is eliminated. Lubricants are retained longer.

Thanks to the precision manufacture and smooth surface finish of Timken bearings, friction is minimized. The tapered design of Timken bearings permits them to take any combination of radial and thrust loads, entirely eliminating the need for thrust washers or auxiliary thrust bearings. And because Timken bearings are case-hardened and made from Timken fine alloy steel they take even the toughest shock loads. Lubrication time and material costs are reduced due to the tighter closures permitted by the close tolerances of Timken bearings.

The many advantages of Timken bearings have been proved time and time again in all types of railroad applications. No other bearing has so much to offer . . . no other bearing is so fully proved. Our Engineering Staff will be glad to help you solve your bearing problem. Write The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

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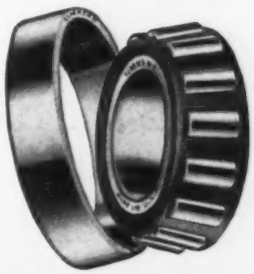
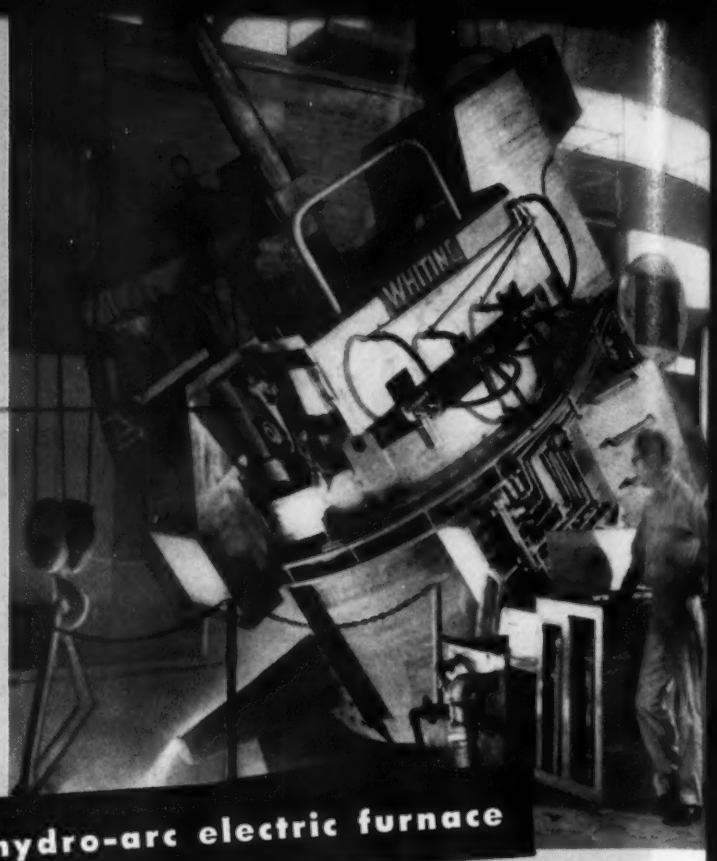


delivers uniform steel at lower cost

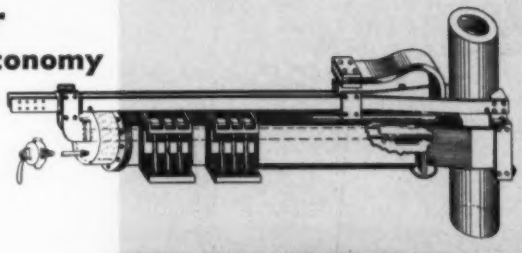
by reducing surging and transformer heating . . . thus improving power factor and lowering power cost

The Whiting Hydro-Arc Furnace employs hydraulic power transmission for positioning electrodes, thus eliminating the time-lag between demand and electrode response. It provides definitely controlled production on a more efficient basis and delivers uniform steel worked under ideal conditions that until recently were considered obtainable only in the laboratory.



WHITING hydro-arc electric furnace

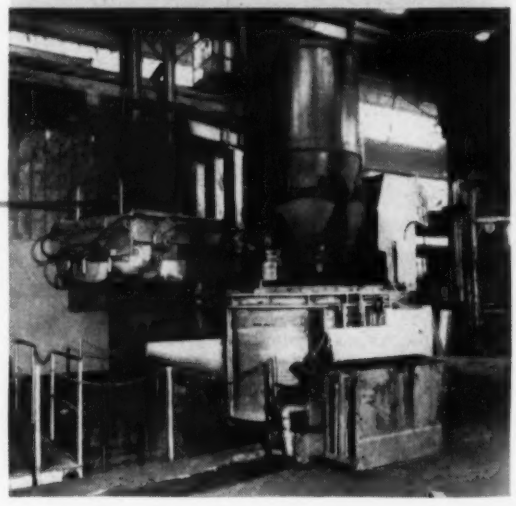
electrode arms and clamps designed for greater safety, convenience, and economy



The electrode arms and clamps are an important feature of Hydro-Arc construction. Melters need not climb over the furnace into oppressive heat and fumes to slip electrodes—they can be slipped from the floor by merely pressing a lever. Electrodes can be adjusted in less than 30 seconds.

top-charging for further economy and increased output

Top-Charging Hydro-Arc Furnaces provide additional savings. The roof, suspended at four points, swings aside while the charging bucket lowers into the furnace and discharges without jarring or damaging refractories. The furnace can be completely charged in 5 to 7 minutes after tapping, making "down time" negligible, reducing costs, and increasing the number of melts per day.



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Base sections for standard milk cans are but one of hundreds of varied uses for Bethlehem Cold-Formed Shapes. The versatility of these shapes and the savings they make possible have led to their adoption in an ever-widening range of products. New uses keep turning up almost every day.

Bethlehem Cold-Formed Shapes are made from strip, sheets, or plates. They are uniform in thickness, practically free from scale, and have an excellent strength-weight ratio. They come in all gauges from 7 to 24, inclusive.

Although you may not have suspected it, there's very likely a money-saving use for Bethlehem Cold-Formed Shapes in your own plant. Get in touch with us, and we'll arrange for a Bethlehem representative to analyze your operations and offer suggestions. No obligation, of course.

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THE IRON AGE

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Special Article

The great variety of stainless steel compositions available makes it necessary for users to have a clear understanding of the characteristics of each in order to pick the right material for each application. The characteristics and heat treatments for obtaining desired properties are outlined in first half of a two-part article.—p. 65.

Issue Highlights

Lubrication plays a vital part in the cold drawing of bars and tubes. Product finish and die life are affected by the application of proper lubricants. Heat generated by friction can be made useful in cold drawing.—p. 77.

Almost every operation in the various divisions of the National Supply Co. has been modified by company-wide modernization. New equipment is being installed and existing equipment relocated. More than $25 million is being invested this year in new equipment. The objective: acceleration of work in process and elimination of cross-hauls and crane lifts.—p. 70.

A shortage of merchant iron is threatening in the Midwest. This has taken shape during the past month when demand, previously unaffected by record steel and auto output, began to perk up. Improvement of general business, reduced inventories of iron, and shortage of good cast scrap are factors.—p. 85.

The steel industry got plenty of free advice from Washington planners last week. Among their suggestions were: (1) There should be 20 to 25 more steel companies. (2) A huge boost in capacity is needed. (3) Decentralization is needed. E. T. Weir said these charges were based on "theories and speculation" rather than cold "history and facts."—p. 86.

Producers and consumers take a foreboding view of the long term future of zinc. They believe comparatively scant mine output cannot cope with heightened industrial consumption, and that world-wide shortages of zinc will continue.—p. 89.

Coming Next Week

Lower cost annealing can be accomplished by using a 75 pct hydrogen, 25 pct nitrogen mixture. The atmosphere is produced in an ammonia dissociator. Storage and handling required with standard cylinder hydrogen is eliminated. Direct savings allow initial investment to be recovered in less than a year.

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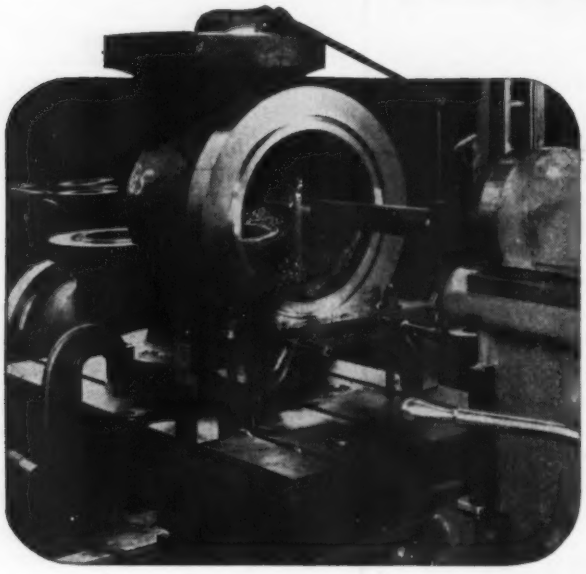
Indexed in the Industrial Arts Index and the Engineering Index. Published every Thursday by the *CHILTON CO. (INC.)*, Chestnut and 56th Sts., Philadelphia 39, Pa. Entered as second class matter Nov. 8, 1932, at the Post Office at Philadelphia under act of March 3, 1879. $8 yearly in United States, its territories and Canada; other Western Hemisphere Countries $15; other Foreign Countries $25 per year. Single Copies 35¢. Annual Review Number, $2.00.

Photos—Courtesy William Powell Co., Cincinnati, Ohio

Internal Shaping...



Here is a 32" Cincinnati shaping the guides on a 10" class 600-lb. flanged end gate valve body. Cut length is 16"; feed, .010".

SOLVED THE PROBLEM Internal shaping is the answer to a long list of "hard-to-get-at jobs." The illustration shows two Cincinnati Shapers of a battery of ten machines shaping both male and female valve guides at the William Powell Company.

MANY SIZES Valves ranging from small 8"—150 lbs. pressure to 30"—2500 lbs. pressure, weighing well over 1000 lbs., are rapidly and efficiently handled.

SIMPLE TOOLING Extension tool holder and high-speed bits cost relatively little. Cincinnati supplementary tables permit rapid setups for the larger valves. Low-cost operation is combined with a high production efficiency.

Write for Shaper Catalog N-4 for complete description of Cincinnati Shapers.

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Editorial

INDUSTRY VIEWPOINTS

Let's Talk Turkey

BENJAMIN FAIRLESS, U. S. Steel's chief, and Charles White, Republic Steel's president, did a good job of defending their industry recently in Washington. They were on the offensive. This is good. But these two men need help. They need support from their confreres, their customers, their stockholders and the public. If they don't get it, this country may be seriously weakened.

Let's forget for a moment the need for a better picture of business' side. Let's even forget that time's awasting because not enough people give the true story and not enough people know the true story.

Big and little business helped win the war. Little business is unwilling to see big business eliminated. Nor does big business want to do away with little business. It is hard to tell where one leaves off and the other begins. It is just as hard to say which is the more important. They both are essential. The country could not prosper without both.

We are in a cold war. The Administration admits by implication that we have lost a few rounds to Russia. No one knows for sure if war will break out in 10 min or 10 years—or ever. But we do know that we must be strong. We must be prepared. We must be ready to back up our talk. We are fighting a cold war with a dangerous enemy.

But to keep free speech, free enterprise and democracy, this nation must be ready to fight for them. To fight for them—or to be ready to fight—we must have the most efficient economy and industrial setup in the world. We have it now. We need to keep it.

The question is—can this nation stay strong industrially as long as uninformed committees continue to harass, accuse, persecute and humiliate American business people using the gimmick of "helping little companies?" Can this nation be sure of being ready for an emergency if demagogues who want to be re-elected try to kill the confidence the people have in business?

Can this country be ready to defend its way of life if politicians care more for their own skins than they do for their country's? And once more, can this nation keep strong when Congressional hearings are prejudged and factual statements by business are completely ignored?

It can not. It is your job to see that the people know the facts. What are you doing to open the people's eyes and heads to the facts?

Tom C. Campbell

Editor

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GIVES YOU THE STEEL YOU NEED...WHEN YOU NEED IT!

If you are in or near the Heart of Industrial America, you should investigate this *superior* steel service. Complete stocks are as close as your telephone.

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NEWSFRONT

NEWS, METHODS AND PRODUCT FORECAST

► A big-name soft drink maker is studying the chances of selling its drink in cans. It sounds fantastic now but if the soft drink industry ever moved over to cans in a big way its tinplate demand would be tremendous.

► One reason steel warehouse stocks are so low now is that many warehousemen shared a general wave of pessimism late last summer. By the time they changed their minds the steel strike caught them and they have not been able to catch up since.

Some large warehouses have not yet received steel they ordered for rolling last fall.

► Experimental work on continuous casting of steel by an important steel producer is progressing much more smoothly since it recently decided to eliminate a lot of elaborate steel holding equipment and to pour directly into the casting machine without some of the preliminaries that were once thought to be essential.

► Here is the background of some Government thinking on chances of war with Russia: So far the Soviet propaganda machine has confined itself to denouncing "warmongering imperialists" for accumulating atomic bombs. But when it switches to an "explanation" of why the U.S.S.R. may have to attack the capitalist world in "self defense," then the risk of war will be even more imminent.

► Drills only 0.001 in. in diameter—thinner than human hair—are now being used to drill hypodermic syringes and fuel injection nozzles.

► Because carbide dies cost more than steel, their application is usually one of economics. Reports show that for some applications cemented tungsten carbide dies cost only 2 to 4 times as much as steel dies, last 10 to 50 times as long.

► Order backlogs—some as long as 5 months—for heating and ventilating equipment have moved up so sharply that some manufacturers are being pinched hard for steel. One manufacturer in the Northeast is talking about shutting down for a while for lack of cold-rolled sheets; another in the South plans to temporarily close its sheet metal stamping department.

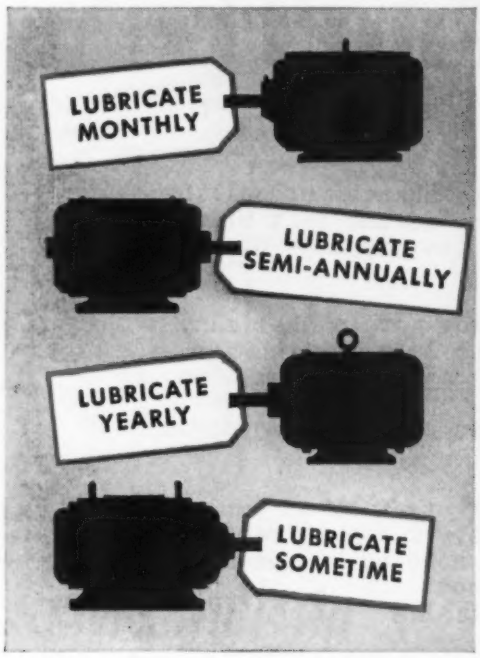
► Freight car builders have come so far from the gloom of late '49 that some are talking about orders totaling 7000 cars a month. With orders for some 30,000 cars now on the books this could mean topping the previously accepted production estimate of 50,000 cars for the year.

► The Signal Corps has developed a new miniature magnetron tube from a German design. It uses less than 100 v, contrasted with 20,000 to 30,000 v required by commercial types, and so may be useful in radio and radar intercept (fighter) work. It is just 4 in. long and has the diameter of a lead pencil.

► The International Bank has just loaned $18.5 million for industrial development in India. An area that may share in the loan is the Damodar River valley, which has huge coal reserves plus an estimated 8 billion tons of high grade iron ore.

YOU CAN BE **SURE**.. IF IT'S

Westinghouse



Why take a chance with "Once-in-a-while" lubrication?

Why fuss with motors that require lubrication "every so often?" Whether it's monthly, yearly, every two or three years, or just an indefinite "sometime," it is as much trouble remembering when to lubricate, as it is to do the lubricating. And it certainly isn't a very good way of making sure bearings get proper greasing attention.

There *is* one way to be *sure*. That's with Life-Line motors. Lubrication is *positive*. Bearings are pre-lubricated and factory-sealed. *No* further lubrication is required!

This is the modern way of lubricating motors. Development of special lubricants, up-to-date manufacturing methods and special seals have made it possible.

Records of nearly half a million motors, operating in every type of industry, indicate that pre-lubricated bearings offer: an average saving of $2.70 yearly per motor . . . 41% fewer motor outages due to faulty lubrication . . . complete freedom from lubrication attention.

Today, periodic lubrication is a costly nuisance. So why take a chance with it when Life-Line offers positive lubrication at no extra cost. See for yourself. Ask your Westinghouse representative for a copy of "Facts on Pre-Lubricated Bearings," B-4378, or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-21559

— If you figure LIFE-COSTS . . . you'll figure LIFE-LINE —

Westinghouse *Life-Line* Motors

INDUSTRY'S LEADING MOTOR

Steel Pounds At Backlogs

Dividing Supplies Fairly

Scrap Scores New Advances

The Iron Age SUMMARY

IRON AND STEEL INDUSTRY TRENDS

NEW production records are becoming commonplace in the steel industry. Every day that operations continue above 100 pct of rated capacity means that an old record has been wiped out and a new record established. This week the industry is scheduled to operate at 100.5 pct of rated capacity, marking the third week at this torrid pace.

But record breaking production will not enable steel supply to catch up with demand within a week, or a month. It is too far behind. Best guess now is that it won't catch up until late this year—and then maybe only for a brief period. Supply fell behind demand when 10 million tons of steel production were delayed because of the steel strike last October and another million tons of output were delayed by the coal strike in February. Steel production losses due to strikes total about 29 million tons for the past 5 years.

Production—Biggest Job

No one can say how much of this deferred production, if any, is lost forever. Certainly a good sized chunk of it is being made up now. But if these "losses" could be made up immediately a lot of the steam in steel demand would evaporate overnight. The realists in the market keep insisting that very little manufacturing is actually being held up for lack of steel. And reports from consumers generally bear this out, despite a few cases to the contrary.

Production is the biggest job facing the steel industry this week. Steel people know this, and they are pulling out all stops in their race to catch up with demand. Although they face a formidable carryover problem, they are doing a good job of maintaining delivery promises in spite of production losses.

The mills are resisting the temptation to oversell their products because they feel that in the long run this policy will pay them dividends in better customer relations. They learned a lesson in the tight market of 1948 and have no intention of allowing their order books to become top heavy with unkept delivery promises.

Deliveries are running from 2 weeks to 6 weeks behind schedule. The average is about 3 weeks. The longest delays are for hot and cold-rolled sheets, strip and galvanized, reflecting heavy demand for these products. Steel people realize that restraint on their part can help prevent this demand from getting completely out of hand.

Mills Allocating Steel Fairly

So far, the mills have managed to maintain fairly close control of delivery schedules by allocating scarce items to district sales offices and adhering strictly to allocations. This results in complaints from some district salesmen and from some customers. But it also results in customer good will. Many letters from customers, some of whom had previously complained when their orders weren't taken, now commend the mills on delivery performance.

The conversion market is booming and prices are fancy. Ingots are selling for $72 a ton, up about $25 in the past 6 months. Slabs are selling for $90 a ton, or $37 above the market. The end of this hot market is still not in sight.

Gray market activity is increasing. The old "daisy chain" crowd has cropped up with the usual intricate details—letters of credit, lawyers with sheets to sell, etc. Careful checking by IRON AGE editors in all major districts shows that they are doing some business. But the tonnage involved is not significant compared with total production. It is also worth noting that the market will not support the high prices of 2 years ago.

Scrap Prices Threaten Breakthrough

Record steel production, plus conversion, is building pressure under scrap prices. This pressure cracked the lid last week and is threatening to blow it off completely this week. The scrap market is on the march and shows no sign of halting. Price increases are general in most areas and grades. Increases in No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia drove THE IRON AGE steel scrap composite price to another new high for the year.

BOARD of DIRECTORS *meeting on a machine screw*

Sounds like an exaggeration, doesn't it? But it's not so far-fetched when you consider that this machine screw symbolizes a whole group of fastenings that have been failing in service because of corrosion.

More or less, this happens every day in American industry. A small bolt or screw or rivet, that was never designed for use under corrosive conditions, gives way—and the whole machine, or process, grinds to a stop.

The only way to keep out of this picture is to make sure that the fastenings you use are non-ferrous or stainless steel.

Harper specializes in these Everlasting Fastenings; makes them in over 7000 different sizes, types and alloys—Brass, Bronzes, Copper, Monel and Stainless Steels; maintains large quantities in stock, ready for immediate delivery from distributors and warehouses located in principal cities.

If rust and corrosion resistance is important to you . . . if you can see the real economy in replacing common steel with fastenings that are non-magnetic, longer-lasting, reusable . . . write today for our catalog and current stock list: The H. M. Harper Company, 8215 Lehigh Avenue, Morton Grove, Ill.

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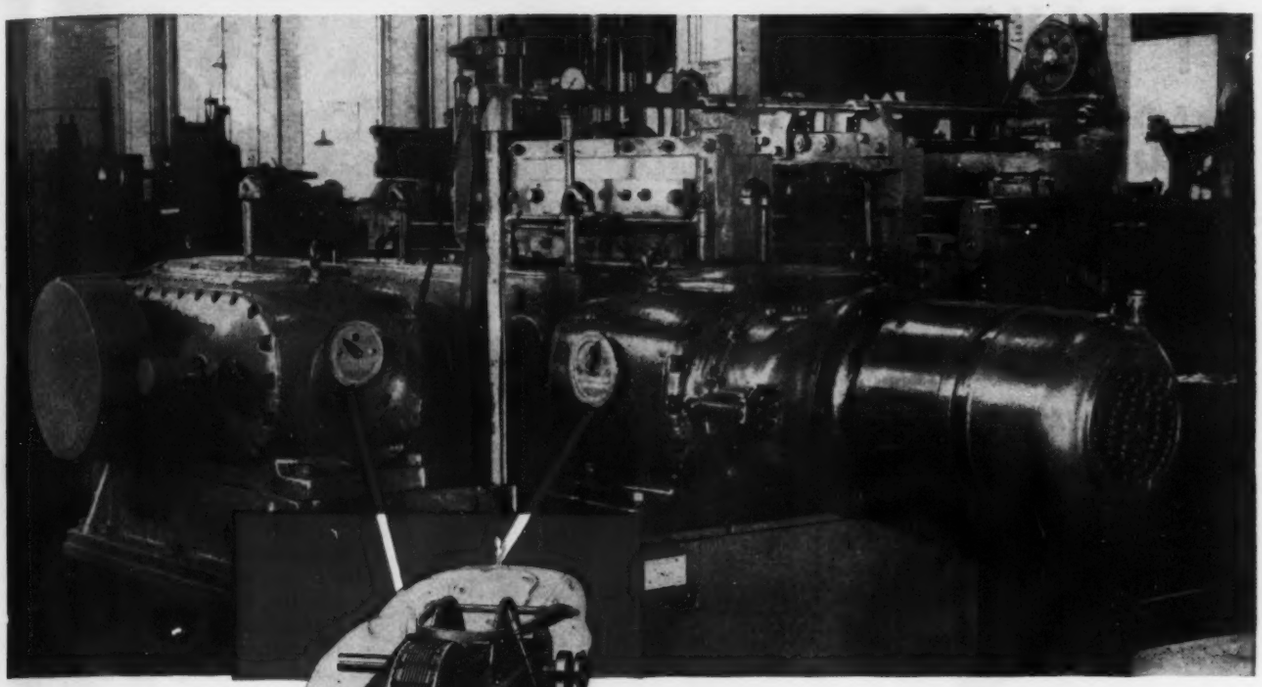

Hallden Type 52 Flying Shear used for cutting non-ferrous metals in shearing departments of larger brass mills showing two Link-Belt P.I.V. drives. Connection from hand wheel to machine-operator position provides remote control.

Hallden Flying Shear Cuts Metal Sheets Accurately . . . with

LINK-BELT P.I.V. DRIVES

Top accuracy without reduction of speed or flexibility — it's a have-your-cake-and-eat-it-too problem when you're after efficient volume production in metal shearing. And the problem's easily solved: Hallden engineers simply use Link-Belt P.I.V. variable speed drives in their combination levelers and flying shear machines.

In the Hallden Type 52, shown in this photograph, a continuously moving shear, synchronized with leveler rolls, cuts lengths from 12 inches to 12 feet, to an accuracy of 1/64 of an inch. Two Link-Belt P.I.V. drives vary the length of cut by regulating the speed of the strip in relation to the knife cycle. The P.I.V. drives provide infinitely variable speed regulation without slowing the knife cycle — which cuts as fast as 250 feet per minute.

P.I.V. DRIVES HAVE COUNTLESS APPLICATIONS

Link-Belt P.I.V. will drive any machine at its ideal speed for maximum production. Positive power transmission through a chain which automatically forms its own teeth, assures transmission of every r.p.m. with no slip. Output speed is accurately controllable while machine is running with speed ratio remaining fixed under constant loading until change is desired.

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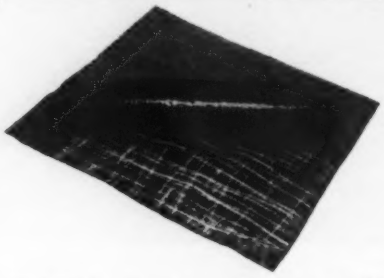

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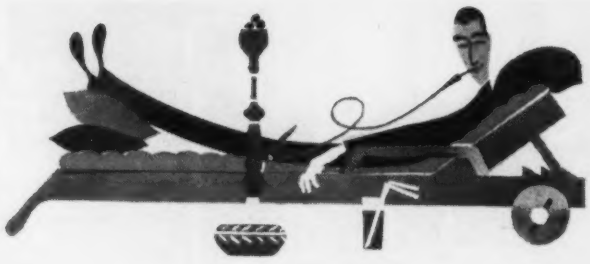

Fatigue Cracks

By Charles T. Post

That's Us

No use denying that the metallurgical wing of your f.f.j. wanted a photomacrograph at the head of this column, tying in with the title. They were voted down by the conformists, who contend that every piece should carry a picture of the author—a practice which has proved very disillusioning to the readers at times. Frankly we enjoyed sitting for this one, and held the pose for 36 hours without any trouble.

The conservatives wanted to paint out the long, tall glass. Said it might be taken for an alcoholic beverage. This being a family journal, you have to be careful about the kind of example you set for young and impressionable readers. The publisher, the editor, the managing editor, and the art editor compromised by showing two straws in the glass, a clear inference of lemonade. The straws wilted and bent almost immediately. We threw them away, but the artist left them in.

The water pipe, or *hookah*, was the art editor's idea, no more factual than any other tobacco testimonial art. The art editor says the *hookah* gives a cool, relaxing, effortless smoke, less irritating than our chain-smoked cigarettes. We've learned since that the smoke passes through rose water, and think we'll stick to Luckies.

Opportunity

The tobacco companies may not be missing a bet by ignoring *hookahs* as a potential mass market for the tired business man, but they're stupid blind when it comes to the needs of the busy housewife. They've painted themselves into a corner with the Federal Trade Commission with their hyper-competitive advertising claims, and their idea of imagination in product design is the long or "king-size" cigarette.

If the cigarette companies would hire a good automotive design man on the job, he'd make a survey of consumer habits and come up with a functional butt-size cigarette, about one-inch long. As it is now, the housewife lights a cigarette in every room in the house, takes only two puffs before laying it down and moving on to other duties. A good five minutes' smoking enjoyment goes into the garbage when the ash trays are cleaned. The butt-sized cigarette would fill the bill perfectly. No muss. No waste. If the manufacturer would furnish toothpicks with every package it might even help balance the family budget.

Puzzler

K. S. Frazier, who claims he worked such things out in his head as a boy, swears that the length of the worm stretched by the robin in last week's puzzler was 2.5 in. Let x equal the length of the worm, $x - 1$ the depth in the ground, and stretch it from there.

D. V. Hamilton, Montreal, brings up a breach of military courtesy in the case of the courier who carried a message from the rear of a moving column to his commanding officer in the front (April 27). He wired (prepaid):

COURIER TRAVELS 2.4142 MILES OR ONE PLUS ROOT TWO TO BE MORE EXACT BUT HE SHOULD TAKE TIME OUT TO SALUTE HIS SUPERIOR OFFICER.

Looks like K.P. for us and for E. J. Sampson, Brockton, Mass., who also submitted the answer without saluting.

From Sidney Reibel, Albert Kahn Associate Architects and Engineers, Inc.:

A train leaves New York for Buffalo every hour on the hour, arriving 12 hours later. At the same times, trains leave Buffalo every hour on the hour, arriving in New York 12 hours later. A man gets on the train in New York at 9 a.m. How many trains does he see on the trip, to Buffalo, assuming he misses none of them?

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Dear Editor

Letters from Readers

No Dross

Sir:

Several readers of the article describing our induction galvanizing furnace (THE IRON AGE, April 13, 1950) were misled by the title to understand that no galvanizer's dross whatsoever is formed when using this furnace. Actually, while dross formation is reduced substantially, it is not eliminated altogether. Inasmuch as you selected this title, we would appreciate your kindness in explaining to your readers why it was so worded.

In general, we are happy to inform you that the article has been very well received as evidenced by a number of sincere letters written by experts in the galvanizing industry.

MARIO TAMA
Chief Research Engineer
Ajax Engineering Corp.
Trenton, N. J.

We're sorry some readers concluded that use of this furnace eliminated dross from the whole galvanizing process. In writing the title we simply wanted to point up the unusual fact that the galvanizing furnace itself did not contribute to dross formation.—Ed.

Kudos

Sir:

Congratulations on the handling of the Worthington story in your March 30 issue. This made a very excellent presentation.

K. R. BEARDSLEE
Vice President and Marketing Manager
Carboloy Co., Inc.
Detroit

From Down Under

Sir:

In your issue of July 21, 1949, there appeared an article on hot spot machining. We would appreciate if you could kindly forward two reprints of this particular article, as we are very interested in this matter.

P. H. HOFFMAN
Chief Mechanical Draughtsman
Purcell Engineering Co.
Australia

Thank you for your interest; copies have been sent.—Ed.

Glass Bonding Alloy

Sir:

We need information relative to an alloy such as Kovar said to be useful for bonding with glass for electrical use. We will appreciate any information as to the source of the metal and the method of using it in connection with glass bonding, and the source of the proper glass to use with it.

J. W. WELDON
President
J. W. Weldon Co.
Kansas City, Mo.

Kovar is an iron-nickel-cobalt-manganese alloy available through the Stupakoff Ceramic & Mfg. Co., Latrobe, Pa. Its principal use has been for electronic tubes, radio and X-ray tubes. The manufacturer will doubtless be happy to furnish engineering details in connection with its use.—Ed.

They Never Die

I found in the *Nickel Bulletin* of January-February, 1947, Vol. 20, p. 17, about 18 months ago, an extract of your article published on Oct. 3, 1946, Vol. 158, p. 41. As I could not find this article I worked according to the instructions given in the extract and honestly I got satisfactory results. Some few months later I sent an article to a Spanish magazine and this was published very soon. I presented your method with some slight alterations which, in my opinion, give the test a higher speed, accuracy and economy being the last factor of great importance in our country. As a result of this semiquantitative test I found the quantitative one (micro or semimicro) for the determination of the molybdenum content in 4 or 5 min. As a matter of fact, what I want is to show you my gratitude and would like at the same time to be in touch with you.

P. DE IBARRA
S. A. Echevarria
Bilbao, Spain

Kirksite Inquiry

Sir:

We would be interested in receiving any information that you have concerning Kirksite for blanking dies, rubber molds, and for plastic. Also advise how to pour Kirksite and any other data available.

K. R. WINDER
Purchasing Agent
Kromex Corp.
Cleveland

Although THE IRON AGE has carried articles involving the use of Kirksite from time to time, the best source of comprehensive information is National Lead Co., 111 Broadway, New York, N. Y. Kirksite is a proprietary material of National Lead.—Ed.

Steel Distribution

Sir:

Can you inform us what was the quantity of steel deliveries, in long tons, for shipbuilding in 1949? The corresponding figure for 1948 was, we understand, 571,429 tons. If there is any revision of that figure will you let us know.

E. BOANO
Secretary
American Bureau of Metal Statistics
New York

These statistics appeared in the annual review issue of THE IRON AGE, January 5, 1950. The compilation is by THE IRON AGE and is based on American Iron and Steel Institute figures.—Ed.

Good NEWS about Burnishing

FROM North, East, West and South comes NEWS that hundreds of metal processors have found Oakite Composition No. 3 to be ideal for burnishing steel, brass, silver, wrought aluminum, die-cast aluminum and electroplated parts.

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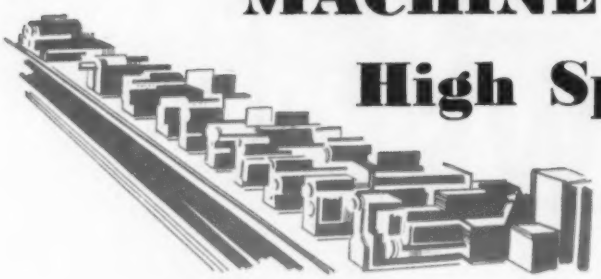

Sales Inquiries and Production

NMTBA's Alter advocates facts in press relations . . . Ford leads parade in Detroit tool activity . . . Replacement formula offered.

by

William A. Lloyd

Cleveland—Seldom is any industry given better public relations advice than L. W. Scott Alter, chairman of the committee on public relations of National Machine Tool Builders Assn., gave NMTBA members at their 48th spring meeting in Chicago, last week.

Commenting on growing editorial interest in the machine tool industry, Mr. Alter, who is president and general manager of American Tool Works Co., Cincinnati, said, "As long as there is this interest in the machine tool industry, whatever may be the source of it, it seems best to send out as much correct information as we can, for in the absence of accurate information we leave the field open to gossip and conjecture.

Orders Seen on Way

"There are some things this industry wants to accomplish because they are in the national interest and the opportunity to speak our piece must not be overlooked."

In Detroit, machine tool activity is pitched high with Ford leading the parade. While formal orders have not yet been placed for all lines, there have been letters of intent or conversations that will soon lead to orders for all four Ford engine lines—including the Ford 6, Ford 8, Lincoln and Mercury. One report indicates that Ford has mapped out a long range engine program over the next 2 or 3 years that will add up to more than $190 million. No formal statement has been made by the company, however.

GM Developments Awaited

Meanwhile, Chrysler activity is second only to Ford, according to the trade. Placements or their equivalent have been reported for the new Chrysler 8 V-type high compression engine and there are strong indications that the new 6 program is about to be launched. An end to the Chrysler strike is expected to increase activity here.

General Motors is comparatively quiet at the moment. There has been some activity at Buick, it is believed, to relieve tight spots on the production line. There is also some talk about increasing the capacity at Oldsmobile. An air of definite expectancy is present and the trade is confident that some important GM developments are in the offing.

Deliveries of special equipment have been pushed back in many cases to 6 months, but the pressure to shorten delivery time is intense. By utilizing their facilities to the limit, some earlier deliveries have been possible.

The Powdered Metals Show in Detroit last week indicated a considerable interest in powder metallurgy. While progress is far from spectacular, hopes for this development are highly favorable and a number of important long term developments are anticipated in the months ahead.

New Buying Formula

In New York a simplified formula for determining when to buy new industrial machinery was outlined by Paul Norton, Jr., vice-president, Kilbourne & Jacobs Mfg. Co., Columbus, Ohio, before the Eastern Regional Conference of National Metal Trades Assn.

Summarizing 15 years of research work, Mr. Norton said emphasis on "short payoff" periods in buying would often prevent desirable replacements from being made.

He said new machines should be bought whenever total annual charges for proposed equipment are less than total annual charges for present machines. To determine these facts, a continuous study should be made by individual factories of all the plant facilities and equipment so that available funds may be used for replacement that seems to offer the greatest return.

Common Errors Listed

Common errors in many replacement formulas include the assumption that any saving in direct labor cost effected by replacement would be accompanied by a corresponding saving in overhead expense. Another error, according to Mr. Norton, is the practice of charging to the new equipment the difference between the undepreciated value and the salvage value of the equipment taken out of use.

He said it was improper to assume that a new machine would accumulate operating inferiority at a constant rate over its service life.

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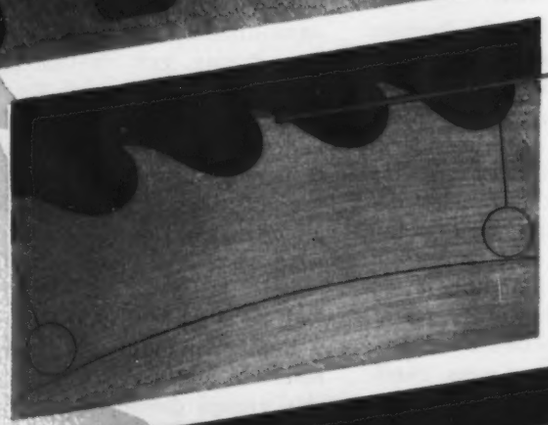
Full high-speed steel teeth for long wear, securely held in a tough alloy steel plate, make this the top production saw for heavy duty cutting. The teeth hold their cutting edges at high temperatures, permitting feeds of nearly double those of solid saws on ferrous and non-ferrous metals. All teeth are perfectly ground to side, top and down clearances, and are easily replaced.



Segmental Saws

Combining solid-tooth thinness with inserted-tooth economy, this saw leaves a remarkably smooth finish. In finer teeth, possible with this design, it is especially effective cutting thin-walled sections. Alternate square and beveled fitting splits the chips three ways for easier cutting. Available with carbide-tipped teeth.

Solid Tooth Saws

Made of semi-high-speed and high-speed steels (in diameters 16" and under), these saws are heat-treated for maximum edge-holding properties combined with toughness. They are radially ground on special machines for perfect side clearance.

Simonds also makes saws of high-speed, semi-high-speed and T-11 (patented) steels to operate at higher speeds for cutting non-ferrous metals.

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Tool Manual

The latest edition of catalog No. 18 is more than just a mere list of tools and prices; it is actually a tooling manual, containing many suggestive uses of the various tools described and also pertinent technical data. Included are sections on the midget mill group, deburring group, tubing and countersink groups and miscellaneous tools. *Severance Tool Industries, Inc. For your free copy, check No.* 1 *on postcard.*

Motor Maintenance

A new 24-p. booklet entitled "Care of AC Rotating Equipment" has been prepared to promote intelligent and consistent maintenance of electrical machines. Contents are broken down broadly into preventive maintenance and machine repairs. The former includes such subjects as drying moist insulation, measuring insulation resistance, bearing clearances and proper machine applications. Machine repair includes data on stator coil and slip ring rotor repairs and balancing of rotating equipment. *Allis-Chalmers Mfg. Co. For your free copy, check No.* 2 *on postcard.*

Pipe Making Shown

How pipe is made by the electric resistance weld method is shown in a new profusely illustrated 20-p. booklet. It contains a detailed description of the manufacturing process, and also shows the sequence of operations in chart form. Ten reasons why Republic electric weld pipe is claimed a superior product are given, as well as essential tables of weights, dimensions and hydrostatic test pressures. One section is devoted to the structural and mechanical applications for the product. *Republic Steel Corp. For your free copy, check No.* 3 *on postcard.*

Versatile Machine

A complete story on the Denison Multipress is presented in short illustrative form in a new 16-p. booklet. More than 130 examples of work performed on this remarkably versatile production machine are shown, and the booklet describes how the equipment is tailored to the exact requirements of the user for almost any operation demanding controlled pressures of 35 tons or less. *Denison Engineering Co. For your free copy, check No.* 4 *on postcard.*

Materials Handling

Specifications and features of the new Mercury Shuttle-Truk are presented in a 4-p. circular. The equipment was originally designed to effect economies in freight and stores handling in the transportation field, but is currently attracting wide attention in general industry as a utility truck, for maintenance work as well as for general handling. *Mercury Mfg. Co. For your free copy, check No.* 5 *on postcard.*

Moly Fabricating Data

Methods and procedures for forming and fabricating molybdenum are detailed in a new 5-p. technical data bulletin. Instructions are given for forming, punching, drawing, shearing, spinning, heating, annealing, brazing, welding, cleaning, etching, grit blasting and hydrogen firing. Most of the information contained is not widely known, and will prove invaluable to persons using or contemplating use of this material. *Fansteel Metallurgical Corp. For your free copy, check No.* 6 *on postcard.*

Electrical Resolvers

Eight new miniature electrical resolvers and seven others in two size groups developed particularly for electromechanical computing and control equipment are described in a new 12-p. booklet. *Arma Corp. For your free copy, check No.* 7 *on postcard.*

Production Counting

The latest model Productimeter stroke, rotary and pick printing counters are described and illustrated in a 4-p. folder. The catalog gives specifications, information on forms and operation, and explains advantages of application

Turn to Page 106

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Turret Punch Press

For high speed piercing of sheet metal a turret punch press combines the pantograph for rapid hole location with the turret for quick access to punches and dies. The turret of the machine carries 16 to 20 different punches, and dies up to 3 in. diam—round, square, shaped, or group. A handwheel rotates the turret to put punch and die in piercing position in 2 sec. A free moving stylus guided by the operator from hole to hole in the template, positions the material to be pierced under the ram. The press is automatically stripped, after the stylus point has positively engaged the template holes. The press has 15-ton pressure capacity, with an 11/16-in. stroke of the ram that operates at 175 strokes per min and is powered by a 1 hp, 3450 rpm motor. *Wiedemann Machine Co. For more data check No.* 20 *on postcard.*

Revolving Joints

A revolving joint for cooling and heating rolls is a cartridge type joint, said to eliminate all shutdown time. The unit has no bearings, no lubrication, and no flexible hose. Rotation takes place close to the roll minimizing roll misalign-

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PRODUCTION IDEAS

Continued

ment, between a ball and a seal that will take temperatures from –40° to +500°F. The cartridge does not rotate. A spring seated seal inside the cartridge holds the pressure, the higher the pressure the tighter the seal. The joint can be used on steam, air, oil, gas, water and other fluids. *Rotherm Engineering Co. Inc. For more data check No.* 21 *on postcard.*

Insert Grinding Fixture

Faster, more economical and accurate grinding of chip-breaker grooves in round, square, triangular shapes and rough and finish grinding of dull or damaged solid carbide insert tools are claimed for a new carbide insert grinding fixture. The unit can be motor driven or hand operated. Model VC fixture is available with lug base for use on tool and surface grinders other than Hammond models. *Hammond Machinery Builders, Inc. For more data check No.* 22 *on postcard.*

Magnetic Clutch

Designed for servos and devices where rapid engagement and release are required, a new compact magnetic clutch has a capacity of 0.20 hp with an input of 3 w. When the electromagnet is energized, the cork faced driven disk is clamped between two driving members. Splined bore in driven disk permits easy coupling to the load. Driving plates are ventilated for rapid cooling. Maximum torque is 4 lb-in.; maximum speed, 3600 rpm. Electromagnet input is 3 w dc or rectified ac. *Barber-Colman Co. For more data check No.* 23 *on postcard.*

Metal Name Plate Marker

A new hand stamping fixture for marking metal name plates is made of Mecco safety steel to prevent spalling and mushrooming. It can be fabricated to order for processing one or a group of name plates, checks and other flat metal objects. The chase section in the bottom of the holder has adjustable horizontal and vertical gages to facilitate stamping on any required panel. The type holder, which fits into the upper arm of the machine, is pulled away from the plate by a spring return, after each stamping. The arm operates on a swivel to simplify changing of type. *M. E. Cunningham Co. For more data check No.* 24 *on postcard.*

Indexing Unit

Labor costs are said to be cut and tooling simplified when using a new all-purpose indexing unit in drilling, reaming, countersinking and tapping operations. The horizontal type unit provides high production through ease of changeover, setup, loading and unloading. In multi-hole drilling operations requiring accuracy of spacing, several of the units can be tooled to allow one operator to feed three or four machines. *Snow Mfg. Co. For more data check No.* 25 *on postcard.*

Low Hydrogen Electrodes

Known as the Tensilend electrodes, three new low hydrogen welding electrodes simplify fabrication by the elimination of preheat in welding low alloy high strength steels in the 70,000, 100,000 and 120,000 psi tensile strength class. They leave a mild steel deposit, but are claimed to differ from most mild steel electrodes in possessing higher tensile strength, better elongation and better impact strength at both room and freezing temperatures. *Arcos Corp. For more data check No.* 26 *on postcard.*

End Mill

Reduction in tool costs of 25 pct is claimed for a new type end mill called Postiv-Lok. The mills are used with a special Postiv-Lok holder that has a locking action aided by torque of the end mill in operation so that the end mill can-

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DIRECT HARDENED GEARS

The direct hardened steel gear is used to carry heavy tooth loading in applications where resistance to wear and surface compressive stresses is not quite so vital a factor. Here again, the nickel-containing steels develop the required strength more consistently and in heavier sections than carbon steels, and are generally more resistant to shock, fatigue and multi-axial stresses. Distortion resulting from heat treatment may be minimized by using nickel alloy steels and their machinability before final heat treatment is very good.

Giving greater play to the skill of the engineer, nickel alloyed steels not only provide increased strength without sacrificing ductility, but they harden at lower temperatures which simplifies heat treatment and minimizes deformation and scaling.

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Nickel alloyed steels enable producers to meet virtually any reasonable requirements . . . whether dictated by revised stress analysis due to design changes, or by changed fabricating methods that demand better machining qualities or improved response to heat treatment.

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The many standard grades of nickel alloyed steels permit specifying the particular type which provides the best set of properties for any reasonable fabrication and service demands.

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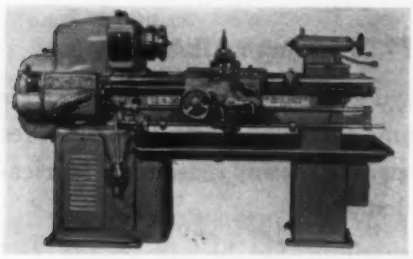
NEW PRODUCTION IDEAS

Continued

not jar loose. Sizes ranging upward from 1½ in. diam are available from stock. *Putnam Tool Co. For more data check No. 27 on postcard, p. 35.*

General Purpose Lathe

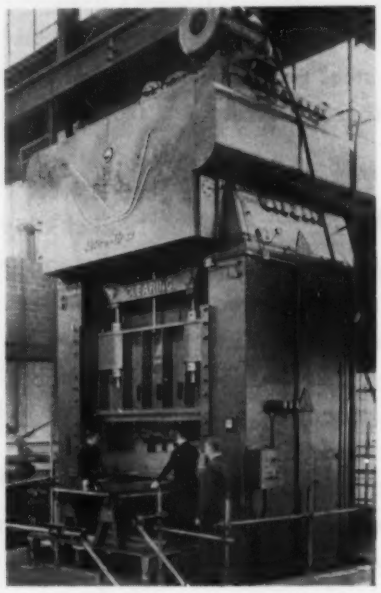
Induction hardened and precision ground bed ways are incorporated in a new general purpose lathe, available in sizes 12x30 in., 12x42 in., and 12x54 in., all with 14½-in. maximum swing over the ways. The spindle is mounted in precision pre-loaded ball bearings and is driven by five V belts. Speeds are selected with a single lever belt shifter from four-step cones mounted on the 3-hp reversing motor and on the jack shaft. Spindle



speeds range from 30 to 1142 rpm. There are 36 selections for threading from 1½ to 80, and 36 selections for feeds from 0.0031 to 0.1666 in. Standard equipment on this Model No. 1 includes: Motor in fully enclosed cabinet leg, standard LI taper spindle nose, totally enclosed head stock, lead screw reverse, automatic apron stops for both directions, full electrical equipment, and latch lever apron controls. *Hendey Machine Co. For more data check No. 28 on postcard, p. 35.*

Drawing Press

A 70 pct gain in productive speed while retaining the actual drawing speed of conventional presses has been demonstrated by the new HyProDraw press that forms an automotive inner door panel in 5 sec. The HiProDraw is a mechanical, double action press, with linkage arrangement that controls movement of the outer and inner slides designed to permit more strokes per minute without tearing the sheet. The machine operates regularly at twelve strokes per minute. Total capacity is 750 tons,



450 of which is on the forming slide. The press measures 108 in. between housings, and will draw and lift out a maximum of 14 in. The blankholder stroke is 22 in. The press is powered by a 75 hp motor driving through a single Tornadyne clutch and brake unit. A portable push button control provides one man operation. *Clearing Machine Corp. For more data check No. 29 on postcard, p. 35.*

Synthetic V Belts

A new line of V belts, named Hy-T, incorporates a chemically produced fiber of high-strength, low-stretch and excellent shock absorbing qualities. The synthetic cord is water and mildew resistant, and has inherent resistance to shrinking. Materials that form the outside covering of the belt have been treated with a mildew inhibiting agent. The belt is claimed to handle 40 pct more horsepower than standard multi-V belts, without excessive stretch. *Goodyear Tire & Rubber Co. For more data check No. 30 on postcard, p. 35.*

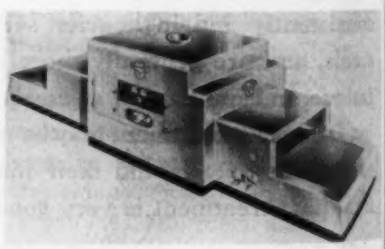
Die Transfer Table

A positioning table used in the placement and removal of heavy dies and tools is said to save time and promote safety. The table serves several machines, and is moved about as required by an overhead crane. It is accurately

positioned, relative to each machine, by insertion of four false legs into prepared holes in the floor. The die is placed on the table by means of the crane, and the table is electrically elevated or lowered for transfer of die to press. The dogs, which travel across the face of the table, are then energized and the die is accurately positioned in the press. Net weight of the table is 5500 lb; capacity lift, 50,000 lb; table size, 60x96 in.; minimum height 21 in., max 31 in. *Hamilton Tool Co. For more data check No. 31 on postcard, p. 35.*

Core Baking Tunnel

Baking cores evenly throughout, with an average baking cycle of only a few minutes, is claimed for the new Model M-7200 Thermonic electronic core baking tunnel. The unit has a capacity of 4 tons of cores per hr and handles cores up



to 60 in. wide with a 20-in. maximum combined height of core and core plate. Tunnel dimensions are 8x8x25 ft. A conveyer speed is adjustable from 0 to 6 fpm. Green cores may be loaded in the core room, directly onto the Thermonic tunnel conveyer, eliminating racking and much handling of cores in the green state. The core plate emerging from the tunnel may go

Turn to Page 110

Follow the NORTON way . . .
to Faster and Better Carbide Grinding

CRYSTOLON WHEELS
(Green and Gray) in the new K Bond
DIAMOND WHEELS
in Vitrified, Resinoid and Metal Bonds

Grinding single-point tool with new K bond CRYSTOLON wheel.

Grinding single-point tool with vitrified bond diamond wheel.

Complete Carbide Grinding Service

1. **Product variety** to handle *every* carbide grinding job. This includes the *new K bond* CRYSTOLON wheel which is making outstanding records because of its faster and freer cutting action; also the Norton *vitrified* bond diamond wheel—a diamond wheel that combines *both* fast cutting action and long life.
2. **Expert engineering assistance** the country over—completely unbiased because Norton has *all* types of wheels for carbide grinding.
3. **Helpful motion picture films** with sound and color—one on carbide grinding and one on the proper use of diamond wheels.
4. **A 138-page handbook** on carbide grinding which will be sent free on request—just ask for Form 167K.

Iron Age *Introduces*

FRANK PURNELL, named chairman, board of directors, Youngstown Sheet & Tube Co.

J. L. MAUTHE, elected president, Youngstown Sheet & Tube Co.

A. O. SCHAEFER, appointed vice-president in charge of engineering and manufacturing, Midvale Co.

Joseph Workman and **J. Rufus Larson** were elected directors of the LATROBE ELECTRIC STEEL CO., Latrobe, Pa.

Frank W. Bemm elected president of the ADVANCE SPRING CORP. He succeeds **D. E. Mielke,** who has sold his interest and is no longer connected with the company.

William J. Monahan becomes vice-president and secretary of SCULLIN STEEL CO., St. Louis, while **Edwin L. Kaiser** is treasurer and assistant secretary and **Fred H. Spenner,** vice-president, mechanical engineering division.

Charles H. Rea was promoted to salesman in the Philadelphia sales office of LUKENS STEEL CO. **John W. Martin** will replace Mr. Rea in the Coatesville district sales office.

Gordon S. Schuhmacher was appointed district manager in Los Angeles for HAGAN CORP. He succeeds **R. L. Sullivan,** resigned, and will be assisted by **Joseph R. Shafer.**

Alexander I. Stayman is the new assistant to the PITTSBURGH SCREW & BOLT CORP.'S executive vice-president. **Thomas Toby** becomes assistant to the vice-president in charge of sales and **Robert M. Smith** replaces Mr. Toby as eastern manager of sales. **A. Barr Comstock, Jr.,** is the new manager of sales in the Philadelphia district.

J. E. Templeton, manager of the Los Angeles branch of P. R. MALLORY & CO., INC., is succeeding **Walter Harvey** as manager of the company's wholesale division. **Charles Gutheil** takes over Mr. Templeton's post in Los Angeles.

H. M. Rich, Jr., is division vice-president, electro metallurgical division, UNION CARBIDE & CARBON CORP.

Herbert H. Rogge was elected president and chief executive officer of CANADIAN WESTINGHOUSE CO., LTD.

J. M. Floyd was named executive vice-president for the A. O. SMITH CORP.

Stanley J. Sarek was appointed superintendent of blast furnaces and **James A. Gaugler,** assistant superintendent of blast furnaces for the HANNA FURNACE CORP., Buffalo.

C. L. Smart, who has served for 10 years as secretary-treasurer of CALIFORNIA COLD ROLLED STEEL CORP., Los Angeles, was made vice-president. **A. Waycott** and **Donald E. Taylor** were recently added to the sales department of the organization.

Russell A. Stevenson, John W. Dregge and **Dean G. Smith** were named new directors of LEAR, INC.

George Demougeot was appointed plant manager for SPERRY PRODUCTS, INC.

Thomas M. Stinson, formerly district sales manager of U. S. STEEL PRODUCTS CO., St. Louis, was made general manager of sales with headquarters in New York. He is succeeded in St. Louis by **G. P. Wardley, Jr.**

George C. Sharp was elected a director of the INTERNATIONAL NICKEL CO. OF CANADA, LTD.

Vernon W. Jones is superintendent of No. 1 open hearth department, and **Edgar R. Westfall**, assistant open hearth superintendent, for ARMCO STEEL CORP.

Lester M. Hurton will be the assistant San Francisco district manager, construction equipment department, BLAW-KNOX CO.

Earl V. Harlow beomes engineering assistant to **Walter F. Perkins**, vice-president and general manager of metal products division of KOPPERS CO., INC.

James C. Zeder was named director of engineering and research of CHRYSLER CORP.

General Lucius D. Clay, formerly commander of U. S. forces in Europe and military governor of the U. S. Zone, was elected chairman of the board of directors and chief executive officer of CONTINENTAL CAN CO. He replaces Carle C. Conway who resigned. Mr. Conway will continue as a member of the board and will serve as chairman of the executive committee.

Ray P. Winberg was named vice-president of REVERE COPPER & BRASS INC., in charge of the Rome, N. Y. division, to succeed **Forrest E. Richmond**, retired.

Frank J. Brosnan appointed to fill post of eastern sales manager for KAISER-FRAZER CORP. **Dean B. Wartchow** is new mid-western sales manager with **Lee D. Schwartz** serving in the same capacity in the central district and **Clarke A. Silcott** in the western area.

Charles E. Ducommun has been named president of DUCOMMUN METALS & SUPPLY CO., Los Angeles, to succeed Edmond F. Ducommun who retires after 54 years of service and has now been named chairman of the board.

Thomas C. Ford was appointed district manager, Cleveland, for the PITTSBURGH METALLURGICAL CO., INC.

Austin E. Hustler was appointed purchasing agent of the WALL WIRE PRODUCTS CO., Plymouth, Mich.

William E. Stevenson, president of Oberlin College, and **Ralph L. Boyer**, corporation vice-president, were elected to the board of directors of COOPER-BESSEMER CORP.

W. McK. Green becomes ore sales manager, succeeding **Henry A. Raymond**, for the CLEVELAND CLIFFS IRON CO. Mr. Raymond is retiring. **John S. Wilbur** is the new assistant manager of the ore sales department.

Iron Age Salutes

CLIFFORD S. STRIKE

CLIFFORD S. STRIKE is a one-man tornado and a top-notch executive who makes decisions quickly and moves fast. No adversity can check his boundless energy for long.

Last Aug. 8 he was critically injured in an airplane accident when a company plane crashed while taking off. On Oct. 8, only 2 months later, he was back at his desk running F. H. McGraw & Co., engineering and construction firm of which he is president.

He is one of the few men well-known in the steel industry who, though his general manner belies it, is not basically an iron and steel man. Since early in the thirties when F. H. McGraw & Co. received its first contract in the steel industry—design and construction of a rolling mill for Gulf States (now Republic) Steel—Big Cliff Strike has been closer to the industry than zinc on galvanized iron.

Last year his company completed $24 million worth of construction work, a new peacetime high. And 80 pct of it was in the metalworking field. A new coal preparation plant for Jones & Laughlin was representative of type.

A civil engineer from the University of Illinois ('24) and a mixture of Jayhawk and Illini, young Strike served on general construction projects in and around New York City for several years after college. But after he got his first glimpse of white hot metal he found it so fascinating that not a year has passed in which the McGraw company has not completed a major project in the steel industry. He has been president of the firm since 1941.

Big Cliff has undertaken a multitude of construction jobs for steel firms. For several years his activities were so entwined with those of the steel industry that he maintained quarters in Pittsburgh, Gary and Birmingham—all at the same time.

During the war the McGraw company handled the mechanical erection of the Geneva Steel mill in Utah, as well as a $17 million rolling mill for Reynolds Metals Co. In addition, Mr. Strike also found time to lend executive supervision to several large army and navy projects.

One of the most unusual jobs Cliff ever tackled was that of rebuilding one of the world's large strip mills in record time. The job was Carnegie-Illinois' 80-in. hot strip mill—400 yards long—the backbone and heart of production at Carnegie-Illinois' Gary Sheet and Tin Mill. The contract called for the job to be finished in 28 days. It was finished in 27 days and 12 hrs. But Cliff still grins when he admits "it was quite a battle".

VERNON W. JONES, named superintendent of steel production, East Works, Armco Steel Corp.

Tom Turner, who joined WESTINGHOUSE ELECTRIC CORP. in 1922 as a machinist, has been elected a vice-president.

Dr. Albert C. Hall, of Massachusetts Institute of Technology, was appointed associate technical director of BENDIX AVIATION CORP.'S research laboratories.

Raymond H. Filsinger, Jr., takes over as sales manager, eastern district, for VANADIUM CORP. OF AMERICA.

A. F. Rust was appointed merchandising manager of HUDSON MOTOR CAR CO.

Donald K. David and **James B. Webber, Jr.,** were added to the board of directors of FORD MOTOR CO.

B. M. Brown is manager of special accounts for WESTINGHOUSE ELECTRIC CORP. **George H. Lester** was appointed manager of the industrial products market planning department. Assistant to Mr. Lester will be **W. W. McElray.**

George F. Wilhelmy, formerly assistant sales manager of the railway division, Cleveland, of NATIONAL MALLEABLE & STEEL CASTINGS CO., becomes sales manager of that division, while **Donald F. Kittredge** becomes assistant sales manager. **Robert D. Sowers** was named assistant sales manager of the railway division at Chicago. **George R. Farrell,** sales manager of the railway division, Cleveland, who has been with the company 43 years, and **Frank E. Moffett,** assistant sales manager of the railway division, Chicago, who has been with the company 41 years, have both retired.

Matthew J. Donachie, Otto T. Englehart, Maurice A. Hallam, Richard M. Quimby and **Daniel D. Schwartz** were elected directors of the BERYLLIUM CORP., Reading, Pa. Elected chairman of the board was **Daniel D. Schwartz.** Officers named were **Otto T. Englehart,** president; **Matthew J. Donachie,** vice-president; **Richard M. Quimby,** secreary; and **Birnie V. Edridge,** treasurer.

William Jones was advanced to administrative assistant to the general manager of sales, ARMCO STEEL CORP. **E. A. Rickling** was appointed chief general accountant for the company. He replaces **C. D. Wilson,** retired.

H. G. Ebdon and **William P. E. Ainsworth** are newly elected vice-presidents of combustion engineering for SUPERHEATER, INC.

Columbus Basile has been elected vice-president of operations, with headquarters at Cedar Rapids, Mich., for the LINK-BELT SPEEDER CORP. Mr. Basile was formerly shop superintendent of Link-Belt's Caldwell Plant in Chicago.

Earl M. Nelson was made regional sales manager for 15 midwestern states by NATIONAL ELECTRIC PRODUCTS CORP.

F. S. Nickerson was elected vice-president of MACK-INTERNATIONAL MOTOR TRUCK CORP. and manager of the company's central division sales territory.

John W. Mantz was promoted to the newly created position of assistant general manager of the Painesville, Ohio, plant of DIAMOND ALKALI CO.

H. P. Richter was appointed manager of real estate of U. S. STEEL CORP. OF DELAWARE. He joined first U. S. Steel in 1937 as assistant to manager of real estate for CARNEGIE-ILLINOIS in Chicago.

Maynard T. Murray was appointed manufacturing manager of the general manufacturing division, FORD MOTOR CO. **Burton O. Heinrich** succeeds Mr. Murray as plant manager.

F. Burneby was elected assistant vice-president of DRAKE STEEL SUPPLY CO., Los Angeles, and **R. E. Ware** was elected treasurer.

Donald B. Newton was elected vice-president in charge of sales for PITTSBURGH BRIDGE & IRON WORKS.

LOUIS J. SAROSDY becomes manager, San Francisco office, construction equipment department, Blaw-Knox Co.

William D. Pomeroy, sales engineer and sales representative in the eastern states for the SNYDER TOOL & ENGINEERING CO., Detroit, has been appointed sales representative in western New York for ARTHUR COLTON CO., a Snyder subsidiary. Mr. Pomeroy makes his headquarters at Seneca Falls, N. Y.

John G. Pacan is district sales manager of the ROUND CHAIN & MFG. CO., Chicago.

C. Porter Packard was appointed sales manager, Crocker-Wheeler Div., ELLIOTT CO., Ampere, N. J.

Max F. Balcom is chairman of the board of .SYLVANIA ELECTRIC PRODUCTS INC., succeeding the late **Walter E. Poor. Frank A. Poor** was elected vice-chairman. New directors include **Edward J. Poor, Richard L. Bowditch** and **H. Ward Zimmer.**

Marshall E. Cusic is district sales engineer with headquarters in Pittsburgh for CHAIN BELT CO. OF MILWAUKEE.

Charles Schriber was appointed manager of sales of the Los Angeles office for EARLE M. JORGENSEN CO.

F. H. Atwood, G. F. Cronmiller, Jr., W. F. Rochow, H. L. Smalley and **E. T. Hile** are new vice-presidents of HARBISON-WALKER REFRACTORIES CO. **W. F. Godejohn** was made senior vice-president of the company.

A. J. Edgar, general manager of HUNT-SPILLER MFG. CORP., was elected a vice-president.

L. J. Richards, chief engineer of DOW CHEMICAL CO.'S Midland, Mich., has been named director of engineering.

MESTA Forgings

Mesta has facilities for the production—from raw material to finished product—of forgings in all sizes required by industry. Shown is a gigantic generator shaft, forged in a 6000-ton Mesta Press, and finished in the Mesta Shops.

Write for descriptive forging literature.

DESIGNERS AND BUILDERS OF COMPLETE STEEL PLANTS

MESTA MACHINE CO.

PITTSBURGH, PA.

On the ASSEMBLY LINE

AUTOMOTIVE NEWS AND OPINIONS

Auto production zooms ahead . . . Tractor sales show signs of life . . . Chrysler strike ends . . . Reuther prepares for onslaught on GM . . . Ford's Mead Bricker benches self.

By WALTER G. PATTON

Auto Score Board — Anyway you look at it, the auto production pace is sizzling.

With Chrysler idle 3 months out of four, here's the way the auto score board appears now:

(1) U. S. passenger car output through April is 1,801,000 compared with 1,495,000 a year ago.

(2) U. S. trucks assembled—400,600 in 1950 against 436,-700 last year.

(3) Estimated May output 700,-000. This would be an all-time monthly output for the industry. The figure includes an estimated 58,000 units by Chrysler.

(4) The independents are moving up. Recently Hudson, Nash, Kaiser-Frazer and Studebaker pushed their schedules up a notch, thereby taking up some slack caused by temporary declines at Ford and GM.

The auto production picture—now and for the future—brings steel availability into the spotlight all over again. Extra steel is just not to be had. Auto producers who hoped to stay out of conversion are now in it with both feet. GM is reported to be expanding its steel commitments.

The future is bright for the steel seller. But it's tough going for auto parts suppliers needing more steel and for the man waiting in line for a new car.

Hopeful for Future — Tractor sales are not booming like auto sales but the industry has a lot of optimism that was missing a few months ago.

Merritt D. Hill, general sales manager of Dearborn Motors, reflected this optimism on his recent return from a visit to the south and southwest. Heretofore, this has been a backward area as far as farm mechanization is concerned.

Most Dearborn dealers in the south are months ahead in their sales during the first 3 months of this year, Hill reports. Inventories are the lowest in a year and a half.

The sales gain is attributed to the trend toward farm mechanization and successful demonstration selling. "Our sales curve follows the demonstration curve almost without exception," a Dearborn spokesman explained.

Dearborn Motors, which produced 20 pct of the tractors for the entire industry last year, expects to see its 1950 production about equal to the 1949 total. Production has been steady this year. Second quarter schedules are at the same level as the initial 3 months—about 26,000 units.

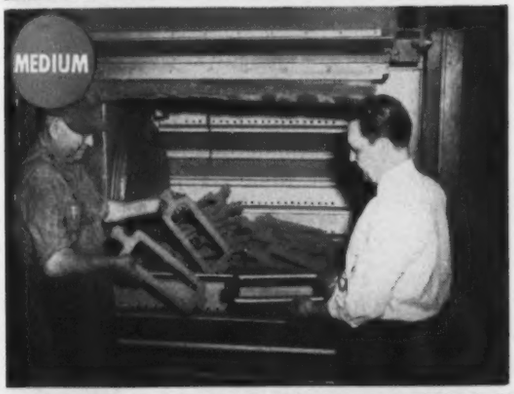
An encouraging sign is that heavy items, like combines, are moving briskly. The company expects a good demand for its corn pickers. There is a question mark around wheat since the 1950 crop is expected to be one of the poorest in the past several years.

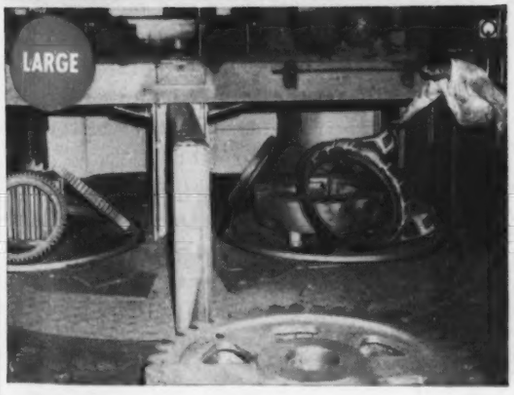
The Iron Fist—Those who hold the theory that the way to handle a "tough guy" is to beat him at his own game are seeing this theory tested in the Chrysler strike.

Chrysler management has met every union bid for increased power with a firm "No." From the outset, Chrysler apparently recognized that, armed with a bigger bank roll (resulting from $1

AIRLESS **Wheelabrator**® BLAST CLEANING

saves money for any size foundry





SAVES $2.31 per ton—$1,108.00 per year

for the Welsbach Corp.

The Wheelabrator now cleans castings in three to four minutes that formerly required 45 minutes by the old method.

	FORMER METHOD	WHEELABRATOR METHOD
MACHINE	Two wet tumblers	27" x 36" Wheelabrator Tumblast (5 cu. ft. capacity)
PRODUCTION	1.74 tons daily	1.92 tons daily
COST PER TON	$6.75	$4.45

SAVES $1.47 per ton—$4,777.50 per year

for Auto Stove Works

One Wheelabrator replaced 8 tumbling mills and reduced cleaning costs $95.55 per week. It cleans castings so thoroughly that tools now last longer and the overall efficiency of the foundry has been improved.

	FORMER METHOD	WHEELABRATOR METHOD
MACHINE	8 tumbling mills	36" x 42" Wheelabrator Tumblast (11½ cu. ft. capacity)
PRODUCTION	12 tons in 9 hours	13 tons in 7 hours
LABOR REQUIREMENTS	3 men @ 9 hours (27 man hours)	1 man @ 8 hours (8 man hours)

SAVES $1.37 per ton—$10,275 per year

for Sawbrook Steel Casting Co.

The Wheelabrator Twin Table is effecting a $41.10 saving every working day. This machine cleans castings weighing from 50 lbs. to 3500 lbs. each. Operating and maintenance costs are reduced to a minimum.

	FORMER METHOD	WHEELABRATOR METHOD
MACHINE	Airblast Room and Humane Airblast Table	72" Wheelabrator Twin Table with three Wheelabrator units
PRODUCTION	30 tons daily	30 tons daily
LABOR REQUIREMENTS	6 men, 50 man hours daily	3 men, 24 man hours daily
COST PER TON	$4.75	$3.38

New, informative book gives complete, concise information on all phases of airless blast cleaning. Write today for Catalog No. 74-A.

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WHEELABRATOR & EQUIPMENT CORP.
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WORLD'S LARGEST BUILDERS OF AIRLESS BLAST EQUIPMENT

weekly assessments on a million workers for 12 weeks), Walter Reuther would be, if anything, "tougher than usual." The company was apparently fully resolved to stop Reuther's bid for a stronger voice in pensions. Only reluctantly did it set up an outside fund for pensions. Union sources claim the company's enlarged contribution for insurance was far from freely given.

On to GM — Meanwhile, Reuther is facing another tough battle "across town" with GM. If he had failed to get an improved contract from Chrysler he would leave GM with a potent argument: GM still has to compete—despite its whopping earnings.

Another Chrysler tactic, seldom neglected during the strike, was to announce the fact publicly whenever a settlement appeared imminent. When the settlement failed to materialize, Reuther had to explain. He always had an explanation: he blamed Chrysler. To company sympathizers, the explanation looked phoney. To union workers, it must have been at least partially convincing.

Has the Chrysler "get tough" policy paid off with the workers? The only significant fact is that during the final week of the strike, office workers in MoPar, Chrysler parts subdivision, voted in favor of a union in an NLRB election. Here, too, Chrysler resisted the union's organization attempts to the limit.

Briggs and CIO — Local 212, UAW-CIO, has let it be known that the new Chrysler contract will become a basis for its negotiations with Briggs Mfg. Co. These negotiations began as soon as the Chrysler strike was settled.

Pensions, medical and hospital insurance and "wage inequities" are in need of overhauling, the union says.

So-called "wage inequities" may be the hottest subject. However, since many Briggs employees have already been deprived of 14 weeks' earnings by the Chrysler strike, a stoppage at Briggs is not anticipated. Most observers feel that, barring hot-head intervention, the Briggs negotiations should find a peaceful solution.

Gas Savings—You may not like to drive 50 miles an hour—instead of 70—but you will probably be strongly in favor of the 25 pct saving in gasoline. You may not like to nurse your car in traffic, but it will save you another 10 pct on your annual fuel bill. Other ways to save gas:

(1) Shift into high as quickly as possible.

(2) When the temperature drops below 30°F, warm up your engine before starting.

These and other pertinent driving data are disclosed in the Plymouth Motor Corp. booklet, "Fuel Economy Through Planned Driving."

The potential gas saving from careful driving adds up to 60 pct according to Plymouth engineers who made actual road tests to prove their claims.

Bricker Retires—Another legendary automotive figure has retired to the sidelines. Mead L. Bricker, the man who answered the question, "Will it Run?" with a bomber an hour, has retired as vice-president and member of the Administration Committee of Ford Motor Co. He celebrated his 65th birthday recently. Bricker will continue as a member of the Ford board of directors.

Bricker joined Ford in 1904 as a machinist. He left the company in 1905, returning in 1914. He has held important administrative posts at the Rouge, Highland Park and Willow Run plants.

Bricker was production superintendent in the 1920's when Ford was rolling out 9000 cars a day. He was named a Ford director in 1943 and made general manager of Willow Run. The bombers that came off the line at Willow Run bore the stamp of his production genius, as did millions of Ford cars turned out at plants all over the world.

THE BULL OF THE WOODS By J. R. Williams

YOU CAN TELL WHEN A GUY LAYS OFF NOT SO MUCH CUZ HE'S SICK AS CUZ HE'S GOT A ROTTEN JOB--HE'S ALWAYS SORE CUZ THEY DIDN'T PUT SOME POOR GUY ON TO FINISH IT UP WHILE HE WAS OFF!
NOBODY EVER SEEMS TO GET SICK ON A SNAP-- IF HE'S SICK AT HOME HE COMES DOWN TO GET WELL ON TH' SNAP!
5-12
J.R.WILLIAMS
AS YOU WERE
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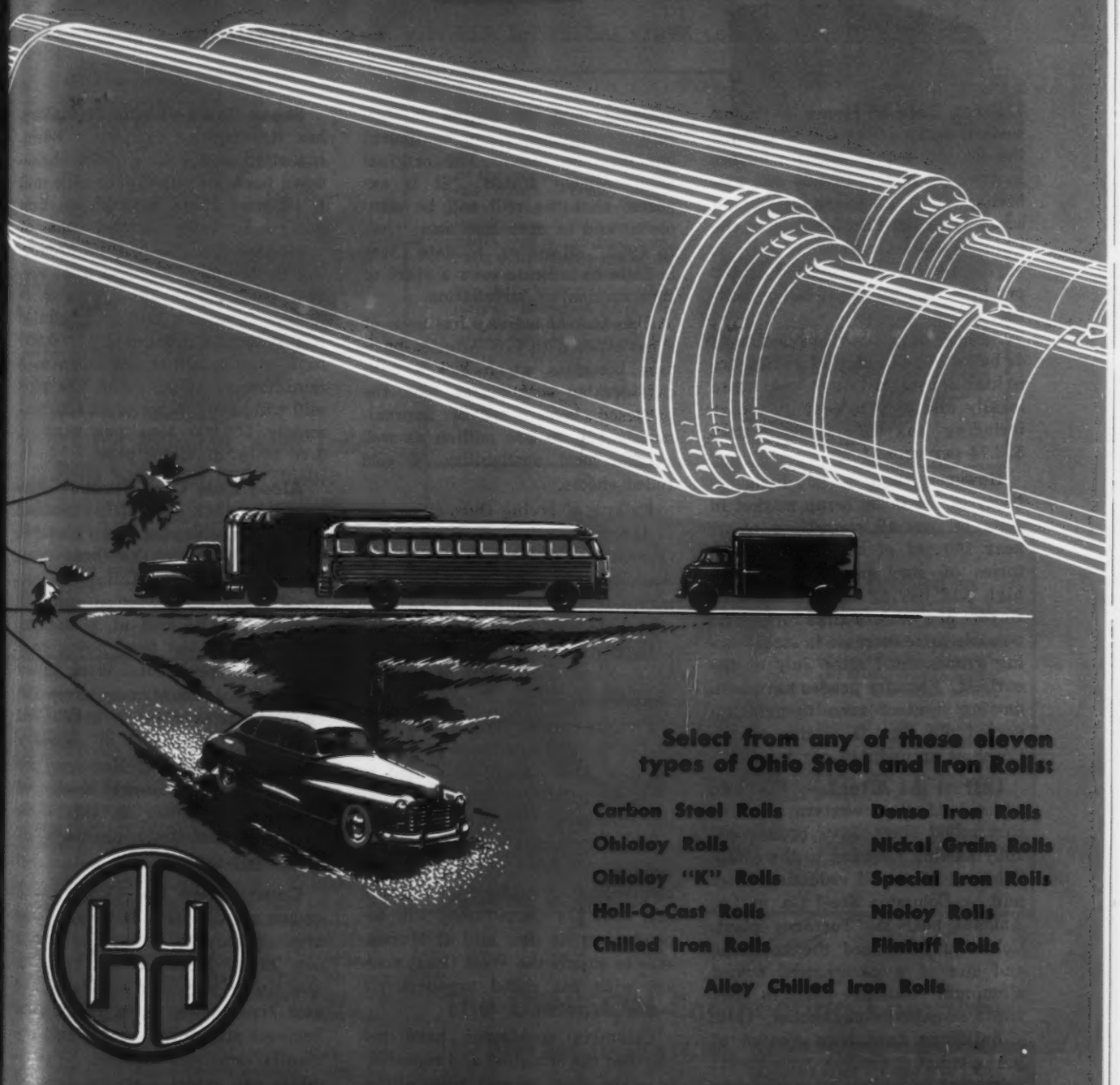
Shaping Metal for all Industry

Ohio Rolls



Select from any of these eleven types of Ohio Steel and Iron Rolls:

Carbon Steel Rolls	Dense Iron Rolls
Ohioloy Rolls	Nickel Grain Rolls
Ohioloy "K" Rolls	Special Iron Rolls
Holl-O-Cast Rolls	Nioloy Rolls
Chilled Iron Rolls	Flintuff Rolls

Alloy Chilled Iron Rolls

THE OHIO STEEL FOUNDRY COMPANY

LIMA, OHIO • Plants at Lima and Springfield, Ohio

WEST COAST PROGRESS REPORT

Digest of Far West Industrial Activity **By R. T. REINHARDT**

Scrap Safe at Home — Rising eastern scrap prices fail to disturb the complacency of western buyers as they sit under a $1.00 cwt umbrella. That is the cost of moving scrap from the Pacific Coast to the Chicago market which currently is paying in the neighborhood of $32 per gross ton for No. 1 heavy melting.

As long as that price remains at or below the $42 high of 1948 there is little incentive to purchase scrap locally and ship it east at a cost including tax of approximately $23.74 per gross ton.

However, there is but little activity in the Coast scrap market in spite of over-all operations at or near 100 pct of capacity. Inventories of steel producers remain high and buying is in small lots. Buyers and dealers alike foresee no possible price increase in steel-making grades until after July at the earliest. Foundry grades have been moving upward even though imported pig iron is coming to the Coast at around $45 per ton.

Left at the Altar? — For two and a half years western users of cold rolled sheet have been hopefully looking forward to the establishment of a cold reduction sheet mill by Columbia Steel Co. in Los Angeles near its Torrance plant. Columbia purchased the buildings and site of a government owned aluminum reduction plant in 1947 and took possession October, 1948.

Buildings have been cleared of the aluminum-making equipment; engineers have been at work drawing plans for rearrangement of buildings and installation of steel rolling equipment; and equipment has been on order. The original announcement stated: "It is expected that the mill will be completed and in operation some time in 1950." However, to date there is little to indicate even a start of construction or installation.

This lack of activity has been of some concern to Los Angeles business interests which looked with considerable enthusiasm upon the proposed investment of approximately $25 to $35 million as well as the local availability of cold rolled sheets.

Failure of Irving Olds, chairman of the board for U. S. Steel Corp., to mention such a mill in the Los Angeles area when he made comments on the company's annual report, hasn't helped local morale. He did, however discuss the plant U. S. Steel is to build at Morrisville, Pa.

Rumors persist that a major part of the facilities destined originally for Los Angeles will be routed to Pittsburg, Calif., instead, and that the southern California development will be minor. Some others believe the Los Angeles development will consist of a specialty mill and that the Corporation will depend upon its new mill at Morrisville to supply the West Coast market with flat rolled products via water shipment.

Columbia spokesmen have not clarified the situation and repeatedly state that several possibilities have been and are being studied.

Shake-Down—Kaiser Steel Corp. has its recently completely 86-in. hot strip mill rolling on a shake-down basis and the Yoder pipe mill is likewise going through its first paces. Probably neither one of these new facilities will be producing for the market for at least several weeks, although demand is heavy. The new mill is scheduled to produce approximately 100,000 tons of coils and sheets down to a minimum of 14-gage and the pipe mill will have a capacity of approximately 100,000 tons per year of 5 to 14-in. diameter pipe.

Alcoa Ends Clay Study — Exploration work on alumina-bearing clays in Washington and Columbia counties of Oregon has been completed by the Alcoa Mining Co. and the Hillsboro, Ore., office and laboratory will be held at a standby basis. Alcoa has been doing considerable experimental work in an effort to recover alumina from the clays of the area and it is believed a commercial method of recovery has been worked out. However, the unavailability of large blocks of firm electric power at this time forestalls immediate prospects of such an operation.

Construction Up—Construction employment in the Salt Lake City area appears to be headed for a new high. Much of the building now under way and scheduled for next few months is in public and business structures, requiring substantial amounts of steel. Fabricators can expect a strong demand at least until next fall.

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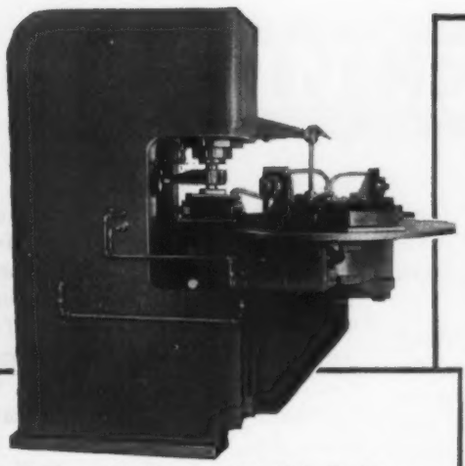

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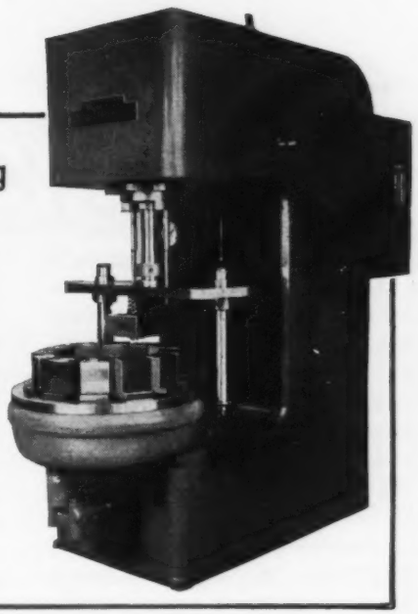

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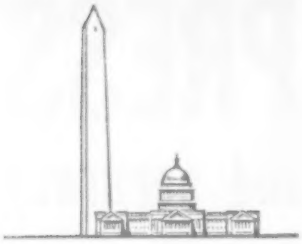


THE FEDERAL VIEW

THIS WEEK IN WASHINGTON

By EUGENE J. HARDY

Investigation Fizzles — Prejudged Congressional investigations may have received a major setback in the past few weeks. The great anti-business crusade of the Monopoly Subcommittee of the House Judiciary Committee is on the rocks, driven there by the slashing attack of the U. S. Steel Corp. Its publicity-seeking chairman, Rep. Celler, D., N. Y., thought he had in U. S. Steel a whipping boy for his latest quixotic tilt in the field of monopoly.

He may have had good reason to think so, for in many previous appearances before Congressional committees, the steel industry came to Washington supine, apologetic, almost with hat in hand and, even more important, obviously unprepared, factually and spiritually, to cope with the Congressional knights in armor. They just didn't want to mix with anything political.

Steel Tactics Change—This time it was different. C. M. White, Republic Steel Corp., began baiting the bull in his own pen and B. F. Fairless, U. S. Steel Corp., completed the goring. Not only did the steel industry take the offensive, but realizing that it was of necessity speaking for all business, it offered a complete constructive exposition of why business does the things it does and took pride in these doings. The factual presentations of U. S. Steel officials were well-prepared and they ducked none of the questions during the rough and tumble that followed the formal statements. The product exhibits which U. S. Steel placed in the Old House Office Bldg. attracted favorable comment from a number of Congressmen despite Mr. Celler's attempt to have them removed from the building.

Irritation Shows— Illustrating Mr. Celler's irritation over the way his crusade was breaking at the seams was his request for identification of every U. S. Steel employee present during one of the hearing sessions. Rep. Michener, R., Mich., countered this with a request for identification of all government employees present, at which time Dept. of Justice and Federal Trade Commission officials scurried for the door and Mr. Celler promptly forgot his original request.

Further Attacks Ineffective— This temporary setback will not stop Mr. Celler's bellowing. He will probably grill a few more steel companies before he is finished. But it has made it almost dead certain that he will never get a majority of the Judiciary Committee to vote for legislation which would put an arbitrary limit on the size of industrial firms.

Justice Dept. Undaunted—Nor will it deter the Justice Dept. from its efforts to break up the steel industry and particularly U. S. Steel. Justice Dept. officials have been attending Mr. Celler's hearings with monotonous regularity. There are definite ideas in the minds of Justice Dept. economists as to how U. S. Steel should be compartmentalized — independent regional integrated steel works built around existing plants, Tennessee Coal, Iron and Railroad Co., to become the center of the southern steel industry, Columbia Steel Co., as the nucleus of the west coast industry, etc. Still another almost unbelievable idea being talked about by Justice Dept. economists would call for a steel industry in most of the 48 states with at least 1 million tons annual capacity for each unit.

Government Ideas Differ—The steel industry's switch to the offensive was warmly applauded in a number of government agencies, notably the Commerce Dept. Commerce Secretary Sawyer has consistently pointed out that business must sell itself to its employees and the public—the most recent instance was at last week's meeting of the U. S. Chamber of Commerce. He has emphasized that the Commerce Dept. would help in such an effort. One Commerce official quipped to THE IRON AGE, "maybe the steel industry has taken up Mr. Sawyer's offer." The position of the Commerce Dept. has been drastically changed under Mr. Sawyer and it has once again become the spokesman for business in the Nation's capital.

HEAT TREATING STAINLESS STEEL

The great variety of stainless steel compositions available requires a clear understanding of their behavior in order to pick the right material for a particular application. Characteristics of these steels, and heat treatment procedures for obtaining desired properties are outlined in this first part of a two-part article.

By L. F. SPENCER
Chief Metallurgist,
Landers, Frary & Clark,
New Britain, Conn.

DEVELOPMENT of the stainless steels has been so rapid during the past 20 years that many users adopted them without a clear understanding of their major characteristics. It is generally known that these alloys are both heat and corrosion resistant, but the large number of compositions available would infer that the properties of heat and corrosion resistance are variable, controlled in accordance to the specific composition.

These varied compositions have been formulated to meet a specific demand on an operation basis. The austenitic compositions as represented by AISI 302 and 304 were formulated to permit deep drawing into shapes, the resultant products having high resistance to corrosion. Compositions containing high sulfur and selenium in conjunction with either molybdenum or zirconium such as are represented by AISI 303, 416 and 430F have been formulated to meet production demands on automatic machining installations. Lastly, the martensitic compositions as represented by AISI 420 and the 440 series have been developed to permit conventional hardening technique for obtaining maximum mechanical properties.

The entire category of stainless steel compositions can be conveniently divided into three major groups:

(1) The non-hardenable austenitic compositions that contain both chromium and nickel as major alloying elements. These are nonmagnetic in the annealed condition and do not harden by conventional methods of heat treatment. They

may, however, be cold worked to develop a wide range of mechanical properties, and in this condition may become magnetic.

(2) The hardenable martensitic compositions containing chromium. These alloys respond to heat treatment in a manner similar to most low alloy steels and, by suitable thermal treatment, will develop a wide range of mechanical properties.

(3) The nonhardenable ferritic compositions containing chromium. Alloys within this group are hardenable only to a small extent. They develop their maximum softness, ductility, and corrosion resistance in the annealed condition.

Annealing Procedures

Austenitic alloys such as exemplified by AISI types 302, 302B, 304, 305, 321 and 347, and in many instances the ferritic alloy, AISI type 430, are frequently used in drawing and spinning operations. They are characteristically cold working alloys (see Fig. 1), attaining high tensile and hardness values upon application of mechanical pressure.

Workability of these alloys is realized to the fullest by a properly conducted annealing procedure which will restore the original ductility of the alloy for further cold working. Because of this property, it is possible to obtain cold-rolled strip with a tensile up to 200,000 psi and cold-drawn wire up to 250,000 psi. Annealing temperatures are quite high, usually ranging from 1850° to 2050°F. This high range is required to redissolve any precipitated carbides and impart maximum corrosion resistance to the alloy.

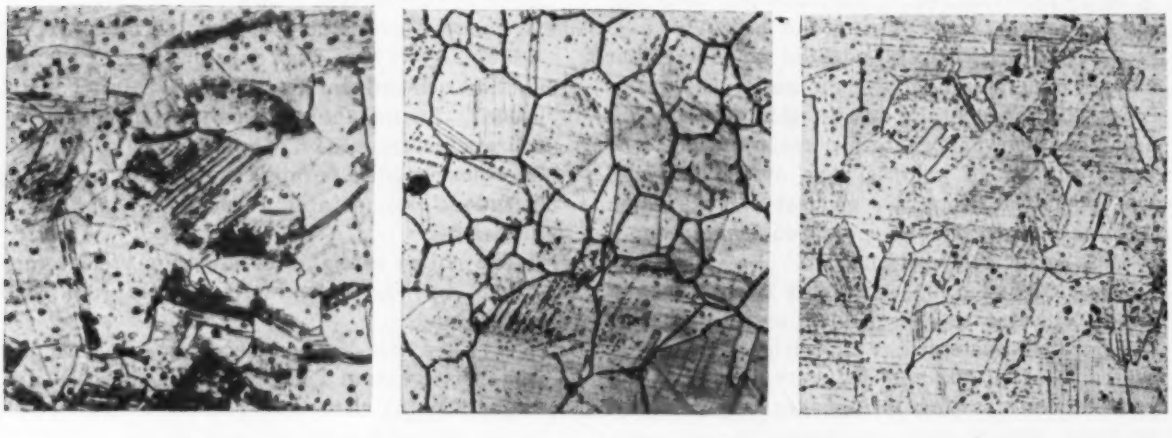
Annealing ranges of the various types of austenitic stainless steels differ to some extent and definite correlation as to type and proper annealing range is mandatory. Time at temperature is as important as the temperature; excessively high temperatures will produce a large grain structure which will manifest itself as a granular or *orange peel* effect when the alloy is subjected to further cold reductions. This surface imperfection is especially troublesome to remove, and increased polishing costs may be expected.

Holding the work at a lower temperature with an increase in the time factor may produce the same effect. A proper time-temperature relationship should be established, which can be accomplished by a trial and error method where previous annealing experiences are lacking. This method is accepted practice since in each individual case such factors as equipment, load per heat and dimension of item must be considered.

The method of quench is dependent upon the gage of material to be annealed. An air quench is sufficient for sheet and light gage plates; where heavier gages are encountered, a water quench is essential. Established practice at Landers, Frary & Clark is to use a continuous roller hearth furnace. This type of furnace not only assures uniform anneal between loads, but also between individual pieces within the same load. A precaution to observe in annealing austenitic stainless steel is that the work be entirely free of carbonaceous material. If this is neglected, harmful carbides which materially affect the corrosion resistance of the alloy will form.

Cracked Atmosphere Suitable

Inclusion of an atmosphere unit on the furnace has aided considerably in realizing a shorter pickling cycle. Usually, where small items or strip are to be annealed, keeping door openings at a minimum, dissociated ammonia has been successfully used for bright annealing. With larger parts, however, loss of atmosphere gas is excessive during charging or discharging of the work load. Because of this factor, a cracked atmosphere that deposits a smutty scale on the



A B C

FIG. 1—Typical microstructures of type 302 stainless (A) cold worked, (B) heavily sensitized, and (C) properly annealed. 375X.

work during annealing was selected. This scale is easily removed during pickling.

The annealing temperature used is from 1900° to 1925°F for 15 min within the furnace proper. A two zone cooling chamber is incorporated in the furnace; the first zone is equipped with fans to rapidly reduce the temperature from the annealing heat to approximately 800°F while the second zone is water-cooled, reducing the load of work to room temperature.

The ferritic stainless steels are non-air hardening and no difficulty is experienced in annealing. The annealing temperatures should be accurately controlled since this grade of stainless is very susceptible to grain growth. Once this occurs, it is difficult to correct.

For maximum corrosion resistance, AISI types 430 and 442, annealed between 1450° and 1550°F and either air or water cooled, are usually selected. The rate of cooling is generally governed only by design, a drastic quench being utilized where distortion is either unimportant or nonexistent due to design. Where considerable machining is to be done and stress is on both wear resistant properties and high impact strength, a low temperature annealing treatment at 1250°F is preferred.

A controlled cooling rate is imperative when annealing martensitic grades of stainless. This group of steels has air hardening tendencies, and a controlled cooling rate will assure maximum softness in the specific grade annealed. An annealing range of 1500° to 1650°F is recommended for the martensitic grades, with the exception of types 501 and 502, whose annealing range is from 1525° to 1600°F.

The straight chromium martensitic compositions with less than 14.0 pct Cr and containing from 1.25 to 2.50 pct Ni are more difficult to anneal. This is apparent upon examining the mechanical properties obtained in the annealed condition. Nickel acts as a retarding agent, slowing down the rate of transformation. These steels require a prolonged soaking at between 1150° and 1350°F before cooling to atmospheric temperatures.

In annealing type 431, an alloy that falls in this category, Crucible Steel Co. recommends annealing by a double treatment.[1] The first phase consists of heating to 1400°F and air cooling after a proper soaking period; the second phase is reheating to 1200°F and air cooling after soaking at temperature.

Hardening and Tempering

The ferritic alloys are classified technically as non-hardening. If, however, a chemical composition is selected in which both the chromium and carbon content are on the high side of the chemical limit range, the alloys can be hardened to some extent. In this regard, it is interesting to review the work of Krivobok,[2] who obtained hardness values as high as 35 Rc upon quenching selected compositions. Because of the possible

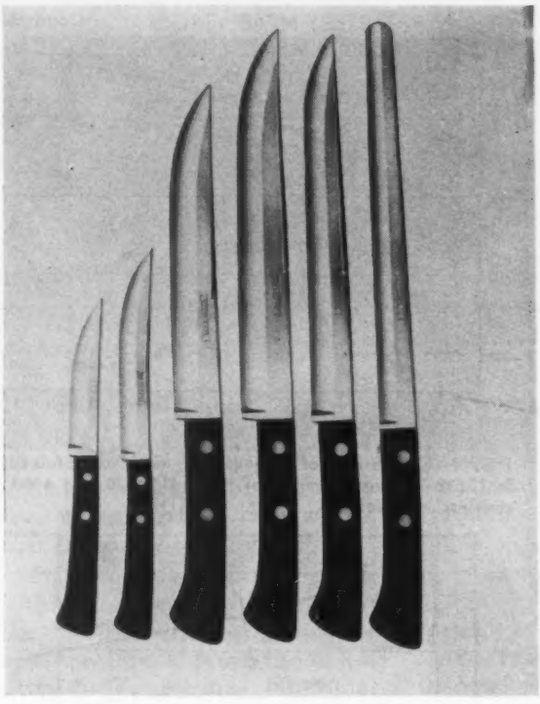


FIG. 2—Set of knives made from type 440C stainless steel. Heat treatment gives a hardness range of Rc 56 to 58, which serves well in this application.

variation in chemical composition of commercial heats of material within this classification, it can be stated that the ferritic alloys cannot be hardened to a useful degree by the conventional quench method. Heat treatment such as annealing is applied to these alloys to modify the mechanical properties only, since their corrosion resistance is not affected by such treatment.

In martensitic stainless steels, transformation from the austenite is similar to that obtained in plain carbon steels. Where no controlled cooling is practiced, an appreciable hardness is obtained by air cooling. Air quenching a typical type 410 analysis produces a maximum of Rc 42; using an oil quench, a maximum hardness of Rc 43 is obtained.

Other martensitic stainless steel compositions commonly used in the cutlery industry are types 420, 440A, 440B, and 440C (fig. 2), all of which have progressively more carbon in the analysis. The 440 series have slightly more chromium than the 420 types. The reaction of these steels is similar to that obtained in type 410 stainless. However, the resultant hardness is higher than that found in type 410, both air and oil quenched.

Comparison of hardness obtained in as-quenched specimens of types 410, 420 and 440A is shown in figs. 3 and 4. Quenching temperatures range from 1700° to 1950°F, cooled in both air and oil. Type 410 exhibits maximum hardness values in the lower ranges, from 1700° to 1750°F; type 420 achieved maximum hardness at 1850°F when quenched in oil, and equal hardnesses were obtained upon air cooling from temperatures of from 1750° to 1900°F; maxi-

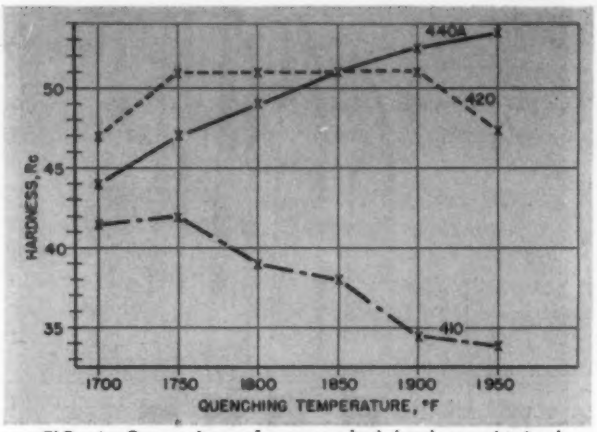


FIG. 4—Comparison of as-quenched hardness obtained in 13/32 in. round samples of types 410, 420 and 440A stainless, air cooled.

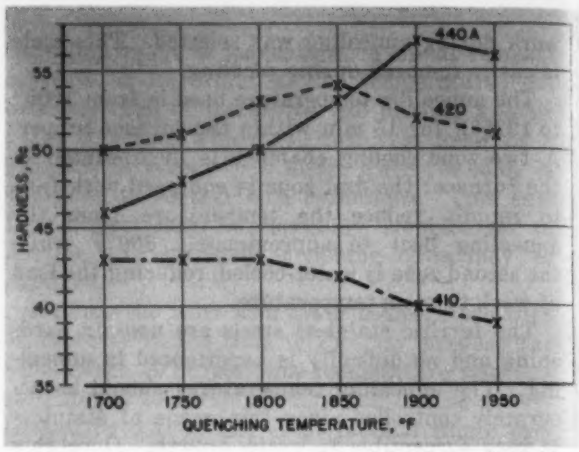


FIG. 3—Comparison of as-quenched hardness obtained in 13/32 in. round samples of types 410, 420 and 440A stainless steel, oil quenched.

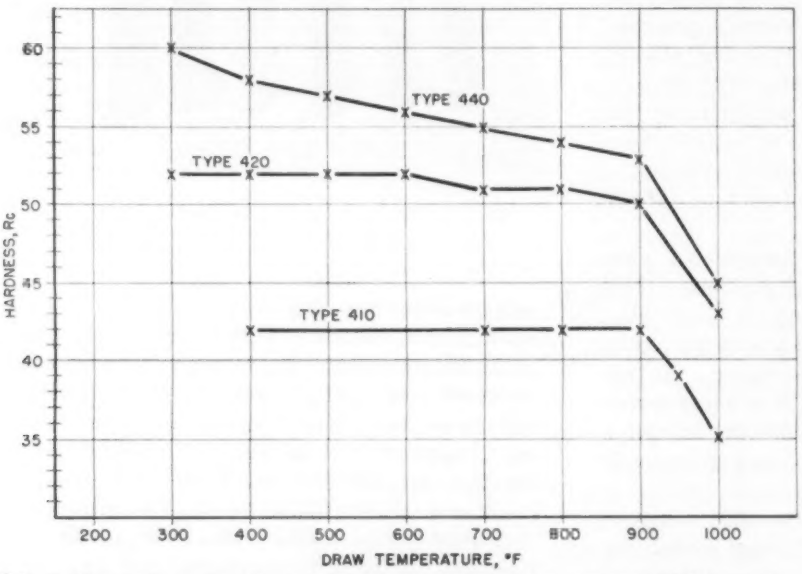


FIG. 5—Comparison of as-tempered hardness of types 410, 420 and 440A. Samples 420 and 440A were 1-in. sq sections, and 410 was a 1-in. round. All were quenched in oil and drawn for 1 hr at temperatures indicated. Type 410 was quenched from 1700°F, type 420 from 1825°F, and type 440A from 1860°F. Data courtesy of Carpenter Steel Co.

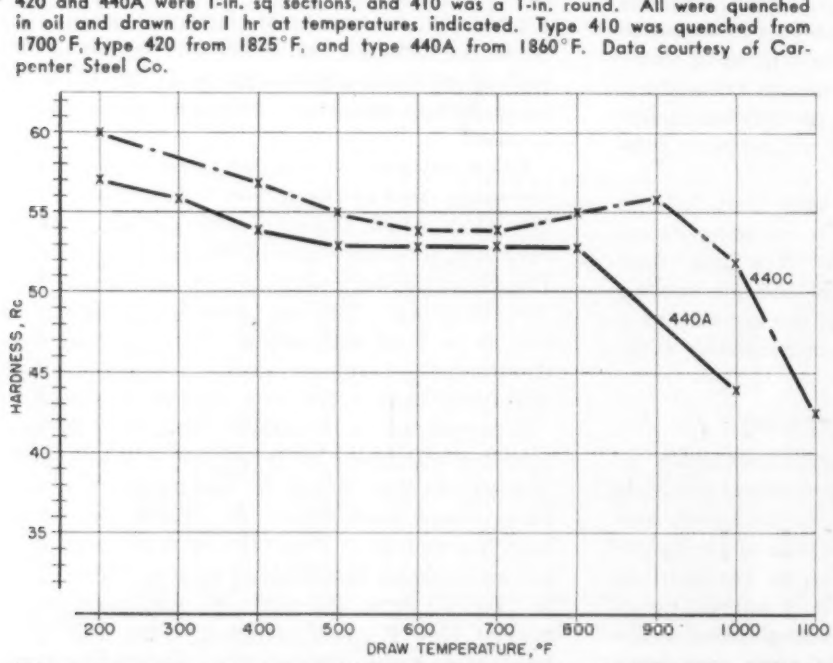


FIG. 6—Comparison of as-tempered hardness of types 440A and 440C, both quenched in oil from 1865°F and drawn 1 hr at temperatures shown.

mum hardness for type 440A was obtained in the higher ranges between 1900° and 1950°F.

The time-temperature relationship for hardening this group is important, especially in those compositions having higher carbon content. Sufficient time at heat is a prime requisite, since the carbides are sluggish going into solution. In compositions containing considerable chromium and molybdenum up to 0.50 pct, carbides are very reluctant to go into solution, necessitating a high hardening temperature and an abnormally long soaking period.

Tempering Stainless

Tempering permits establishment of greater ductility than that produced in the as-quenched condition. The hardenable stainless compositions resist tempering to an extent where the hardness remains quite high over a wide range of tempering temperatures. It is possible to draw as high as 900°F without appreciably sacrificing stainless qualities. However, the higher carbon martensitic compositions are used in applications requiring the greatest possible hardness to resist wear and also provide maximum corrosion resistance; therefore, the lowest

possible drawing temperature is used. Figs. 5 and 6 show hardness obtained in the as-tempered condition of various martensitic stainless steels.

Of interest is the marked drop of impact exhibited by most martensitic stainless when tempered between 800° and 1100°F. It has also been determined[1] that, coincidental with this drop of impact values, there is a lowering of resistance to corrosive media. This condition of reduced resistance to impact and corrosion disappears when the steel is tempered at 1100°F or over. The loss of impact is tabulated along with other mechanical properties obtained upon tempering types 410 and 420, in Fig. 7.

Corrosion tests performed by Parmiter[3] on type 420 stainless, hardened from 1500° to 2100°F, are also interesting. Results are given in the table, the figures denoting relative efficiency. Note that efficiency does not reach the fullest value until a temperature of 1800° to 1850°F is reached; this value varies with the specific corrosive material used.

All austenitic stainless steels are nonhardenable by the standard heating and quenching cycle. This was considered a drawback. In very recent years, a new grade of austenitic stainless known as AISI type 322 has been formulated that will harden appreciably by both the solution and precipitation hardening treatments employed for some aluminum alloys. The initial composition

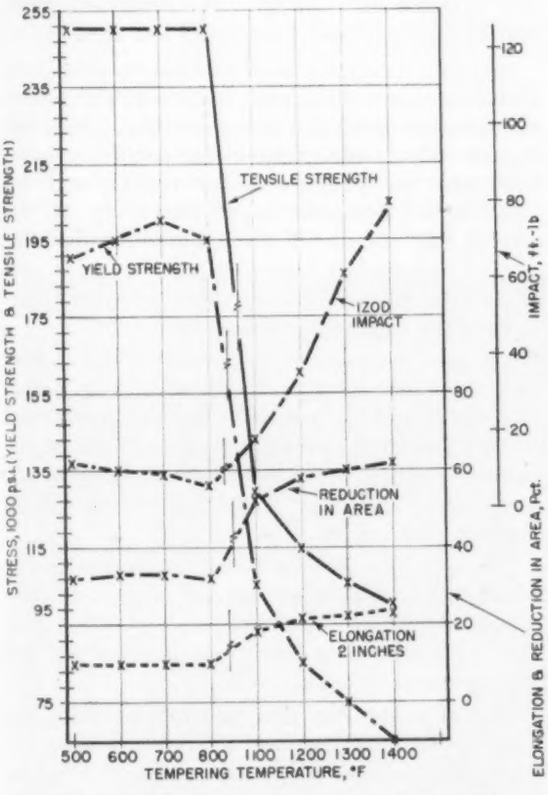


FIG. 7—Mechanical properties chart for type 420 stainless, 0.35 pct C and 13.0 pct Cr. Samples were 1-in. rounds, quenched in oil from 1850°F and drawn 1 hr at temperatures shown. Data courtesy Carpenter Steel Co.

CORROSION TESTS
On Type 420 Stainless Steel

Quenching Temp., °F	Hardness, Bhn	Resistance to Stain, Relative Efficiency: 10 pct $CuSO_4$ 6 min	33 pct HNO_3 2 min	5 pct Acetic Acid, Dried On
1500	340	50	90	50
1600	440	85	90	50
1700	485	90	90	85
1800	550	95	95	90
1900	615	100	100	95
2000	615	100	100	100
2100	560	100	100	100

had an approximate analysis of 0.07 pct C, 0.50 pct Si and Mn, 0.010 pct S and P, 7.0 pct Ni, 17.0 pct Cr, 0.70 pct Ti and 0.02 pct Al. According to Smith, Wyche and Gorr,[4] titanium serves both as a strong ferrite former and as the precipitation hardening constituent.

Solution heat treatment consists of heating within a temperature range of 1200° to 2000°F; the time-temperature relationship is dependent upon the finished properties desired. This is followed by air cooling. Precipitation hardening occurs at a lower temperature range, usually specified as between 500° and 1050°F. Ductility increases as the precipitation hardening temperature is increased. Correspondingly, the other mechanical properties such as tensile and yield strength diminish accordingly.

Nitriding produces a hard wear resistant case on innumerable types of stainless steel. The types most frequently used for this type of heat treatment are AISI 410, 416, 430, 302, 303, 316 and 347. Case depth of 0.010 in. with a 35-hr nitriding cycle has been reported on straight chromium steels such as types 410, 416 and 430. In austenitic alloys such as types 302, 303, 316 and 347, a case depth of 0.005 in. is obtainable with a 35-hr nitriding cycle. The case depth, although shallow in comparison to other case hardening procedures, has extreme hardness, ranging upward to Rc 92-96 (measured on the Rockwell Superficial 15N scale).

In Part II of this two-part article, scheduled to appear in the next issue, the author discusses furnace equipment and various methods of scale removal for stainless steel. —Ed.

The method used in nitriding stainless steel is similar to that employed in nitriding the standard Nitralloy series. As with Nitralloy steels, dimensional growth is experienced. An increase of about 0.0005 to 0.001 in. on surface or 0.001 to 0.002 in. increase in diameter or thickness can be expected, proportional to the depth of case.

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[4] "A Precipitation Hardening Stainless Steel of the 18 Pct Chromium, 8 pct Nickel Type," by R. Smith, E. H. Wyche, and W. W. Gorr; tech. pub. 20006, AIMME Metals Technology, June 1946.

National Supply Spends $25 Million

FOR NEW EQUIPMENT

BY the end of this year National Supply Co. will have invested more than $25 million in modernization of its operating divisions. This program was begun after the end of the war, when materials and equipment were once again becoming available. It's still not completed, but it's getting there. The work has been and is being carried out while the company is under pressure to meet strong demand for its pipe and tubular products and oil field machinery and equipment.

At the company's Spang-Chalfant Div. in Ambridge, Pa., the program is nearing completion, probably will be finished by the end of this year. At the Springfield and Toledo plants the modernization programs have been completed. Drawing to a close also are the extensive modernization programs at the Etna, Pa., and Torrance, Calif., plants.

The changes at Ambridge are typical of what is going on in other divisions. There is scarcely an operation that will not be modified in some way; either through the installation of new equipment or through the relocation of existing equipment with the objective of accelerating the movement of work in process and eliminating cross-hauls and crane lifts.

The company looks for a 20 to 25 pct increase in production at Spang-Chalfant when the work there is completed, is already realizing substantial benefits despite the handicap of continuing production while construction crews are still on the job.

These are the major projects underway or completed at the Spang-Chalfant plant:

(1) Two bloom-heating furnaces of 100-ton and 60-ton capacity per hr, respectively, replacing four furnaces of lesser capacity. Two of the four old furnaces will be maintained as standby equipment for use when the new furnaces are inoperative for repairs or other reasons.

(2) Two new circular-hearth Hagan heating furnaces with a combined capacity of 160 tons per hr in the reheating of rounds. They replace five roll-down type furnaces with a combined capacity of slightly more than half that of the new furnaces.

(3) A 5KTC Sutton straightening machine with a speed of from 50 to 200 fpm for straightening tubes and solid rounds.

(4) A Selas continuous heat-treating line for heat treating casing to develop high physical properties.

(5) The plant's threading department will be divided into three bays: (a) shrink thread drill pipe, (b) API threaded and coupled joints, and (c) extreme line casing. This rearrangement will eliminate cross-transferring and crane lifts.

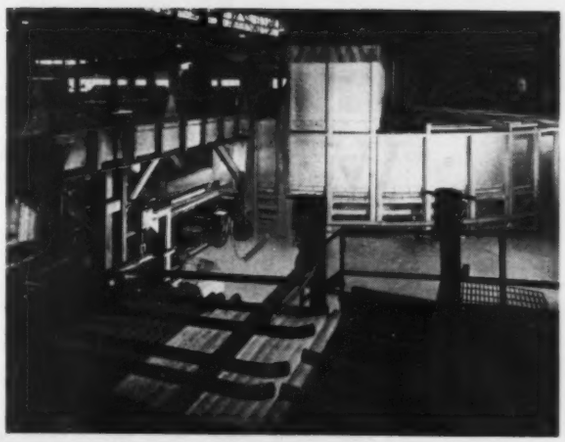
Hot mill changes either contemplated or completed include: New inlet and outlet equipment on piercing mills, and new receiving tables for rolling mills; replacement of high mill housings, new inlet and outlet ends for reelers, and decreasing of center-to-center dimension of reducing mill stands on No. 2 hot mill; installation of new cooling tables on both hot mills and increasing the length of the tables to permit pipe to cool to straightening temperature.

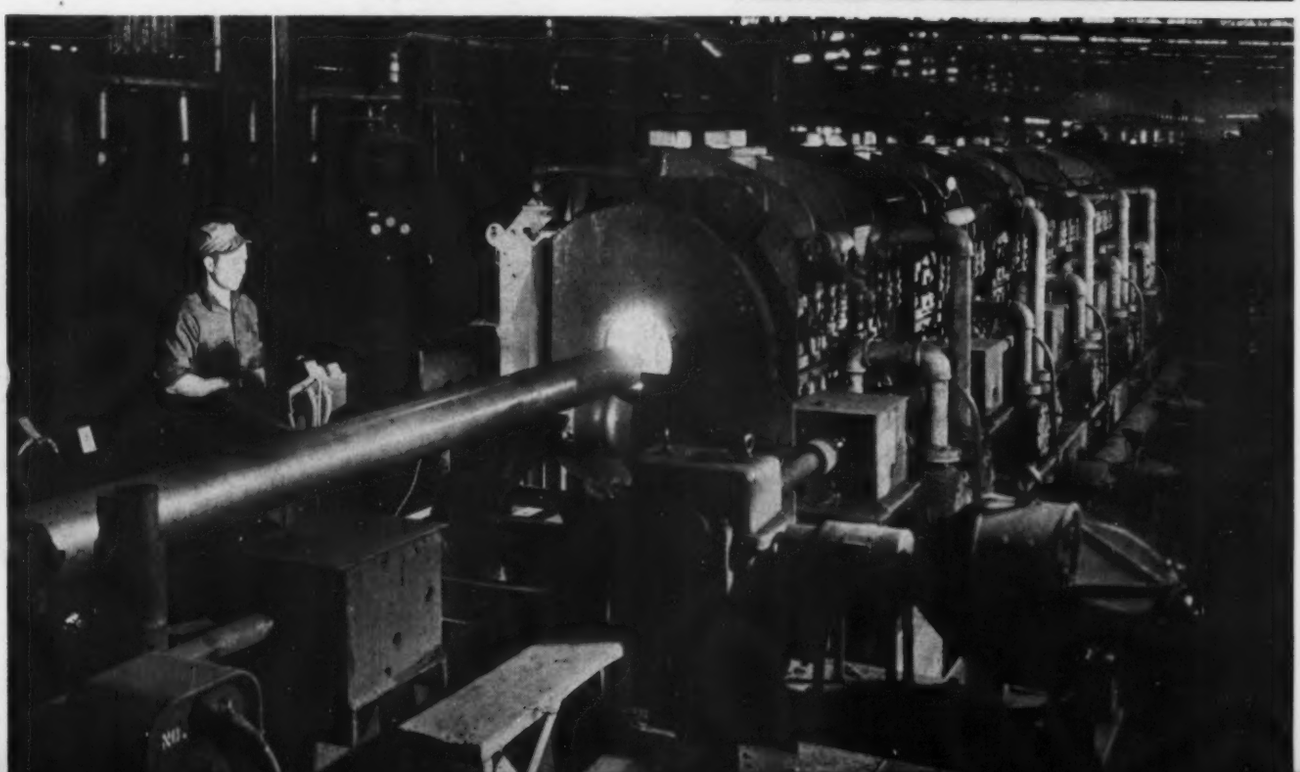
On the finishing end, in addition to the new straightening machine mentioned, new cutoff equipment will be installed, and inspection will be tied in with the straightening and cutting operations. Also scheduled for installation are two Gisholt lathes for machining and threading extreme line casing.

To comply with customers' requirements for hydrostatic tests to 80 pct of minimum yield strength, a Hydropress test bench that will produce pressure up to 10,000 psi is on order and will be installed soon.

The company has also installed a 12-in. upsetter with induction heating for upsetting extreme line casing; has installed a new coupling boring machine and rearranged the coupling department for more efficient operation, and is experimenting with high-speed boring equipment in the drill collar division.

Pipe-straightening capacity ABOVE, was increased tremendously with installation of this 250-hp Sutton straightener. This machine has a straightening speed of 50 to 200 fpm at 300 to 1200 rpm. It will handle 18½-in O.D. seamless tubes with ⅝-in. wall and 18½-in. OD tubes with 1¼-in. wall in which yield points are not over 90,000 lb and 45,000 lb respectively. Solids 5½-in. to 12-in. diam also are handled. RIGHT, this 55-ft circular hearth Hagan heating furnace is a major item in the modernization program. Reheating capacity is 60 tons per hr, with discharge temperatures of 2100° to 2275°F. Furnace is divided into five zones, with individual temperature and pressure control in each. A 70-ft furnace with 100-ft capacity will be in operation soon. BELOW, a seamless tube moves through a battery of Selas furnaces at the Spang-Chalfant-Div., National Supply Co. Capacity of 45 to 140 pieces per 8-hr turn, depending on size, weight and range. At discharge end, piece is water-quenched, then moved over to second battery for drawing. The company expects a 20 to 25 pct increase in production when the Spang-Chalfant modernization program is completed.





FORD Makes Insignias From Precision Dies

By H. B. IHNKEN, SUPT.
Parts & Equipment Mfg. Div.,
Ford Motor Co.,
Waterford, Mich.

Insignias are panograph-engraved onto punch blanks from master patterns 16 times actual size. Hand tooling achieves corner sharpness after engraving. Brass die blanks receive impressions by pressure mating with the hardened steel punch.

WHEN dies for fine lettering and other meticulous work are required, the Ford Motor Co. turns the job over to its small plant at Waterford, Mich. Typical products turned out by this plant are the dies required to produce the thin plastic masks used as shields in sand blasting the Ford insignia on laminated plate glass windshields and windows. Both the dies and masks are produced in this plant. Production is 600 masks per day.

The Ford name and the words *Safety Glass* appear inside an ellipse measuring 11/16 x 7/16 in. Other code letters are also included. For proper etching action during blasting, each letter in the plastic mask must be sharp and clean cut. A punch with raised letters is necessary for the job. To prepare the punch, metal is removed from the punch blank leaving the letters and the broken line ellipse in raised relief.

The initial step in making the punch is to provide a pattern 16 times actual size. On this pattern, the metal around the letters and ellipse lines is cut out and filed by power files, power saws, and, at times, by hand. Patterns are made from plastic, aluminum or brass. When completed, the pattern duplicates the insignia except for size. Some hand work is required to sharpen inside corners where engraving tools cannot enter.

When the pattern is completed, it is placed in the Dietrich pantograph machine, as shown in Fig. 1. This imported precision machine uses a round engraving tool ground to a four-cornered end. These tools are often as small as 0.008-in. diam. The tool axis in this machine remains fixed and the tool spindle is driven by a round belt. A micrometer on the spindle gives vertical adjustment for accurate control of the depth of cut.

Since the tool remains fixed except for rotation, the work is mounted on a movable table having ball bearing ways. Motion of the table is controlled by a follower that engages the pattern. The machine includes a small attachment for precise grinding of the engraving tool. Some hand work may be required on the

FIG. 1—Work is engraved on the moving table of the Dietrich pantograph.

punch after engraving if inside corners are not adequately sharp. When the work is completed, the punch is hardened. Preparation of the mating die is a simple operation because the die is made of soft brass.

In making the masks, it is essential that the punch fit the die perfectly for clean piercing cuts. The mask material is nitrocellulose strip stock 0.005 in. thick. Alignment is insured by using the punch to sink the impression in the brass die. This is done after the punch is mounted in the ram of the Bliss press and the brass die blank is fastened to the press bed. To do the sinking, the press is closed by hand eight to ten times. This forces the punch into the brass and makes the mating impression. The impression is only 0.015 in. deep. The die is then ready for use, as shown in Fig. 2.

FIG. 2—The press, as set up with punch and die, is used to pierce the 0.005 in. thick stencil.

Transparent nitrocellulose strip of desired width is purchased in coils and fed by hand between closings of the die. At each closing, the material pierced out is pushed into the die recesses. As the recesses are not open, the material must be removed by brushing the die with nitrocellulose-dissolving die acetone. In spite of the slowness of this operation, about 75 masks per hr are made.

Masks made in this manner serve for about 100 blastings in the glass plant. It is expected that the number will be increased to about 400 blasts by using a new DuPont plastic now employed for making shoe lace tips.

In another type die, two halves are used in stamping hub cap covers. The central portion has a spherical surface. To produce the punch, metal is routed from the concave surface leaving the letters raised, see left, Fig. 3. Routing is done in a Gorton three-dimension pantograph duplicator using a follower in contact with a pattern previously made to the same size as the punch. Some hand work is required to remove round corners before that punch is hardened.

To produce the mating die, a blank having a convex surface is prepared and is set in proper alignment with the punch in a hydraulic hubbing press. Pressure applied is sufficient to force the raised punch letters into the die. The mating recessed letters can be seen at right in Fig. 3. After this is done, the punch is blued and again pressed into the die. Any

FIG. 3—A die insert to be used in stamping brass hub cap covers is hand spotted to remove round corners and flaws.

high spots showing are worked down with hand tools until perfect mating results. Edges of the raised letters on the punch and the recessed letters in the die are slightly rounded. For this reason the brass being debossed will not be cut when the die is used to stamp hubcap covers.

A different technique is used to make numbering and lettering punches for hand marking tools and dies. These punches are also used as inserts in dies where part or code numbers must be affixed in production. The die for individual numerals is engraved in a pantograph machine using large brass patterns for the follower pin. Dies made in this way are hardened and inserted into the ram of the hammer, see Fig. 4.

Punch blanks of square stock having one end rounded and the other conical, except for a flat cone tip, are made in standard lengths and are fastened by a toggle clamp in line with the die. The die is mounted on the ram of the air hammer and is reciprocated by the ram. As the die strikes the punch blank, metal at the tip of the blank is caused to flow into the die recesses to form the raised letter or number. The punch is then hardened. This relatively fast operation produces up to 200 punches per 8-hr day.

Another type of machine used in this plant is the Martin stamping machine. This machine makes rolls having raised characters for marking purposes. The flat-faced die used has recessed letters that are also produced by the pantograph machine. The die is set in clamps on the reciprocating table of the machine.

Continued

FIG. 4—Numeral and letter marking punches are made in this air hammer.

Above the table is an adjustable slide. A pin on the slide mounts the wheel blank. When the wheel is in place, the slide is lowered until the wheel rests on the die. The slide is then locked in position.

When reciprocated under the wheel, the table rolls over the die as it is slowly fed upward. The pressure applied causes metal on the wheel to flow into the die recesses. In this manner the raised letters on the wheel are formed. Flash formed on the wheel is trimmed off by a bevel cutter. Number wheels made in this way are used for marking engine valves on production lines.

Another product made in this plant consists of engraved blocks for making lead numerals used in marking radiographs in X-ray work. The blocks are engraved with recesses of required size, shape and depth. The recesses have sides that are nearly square with the face and have enough draft for the numbers to be easily ejected.

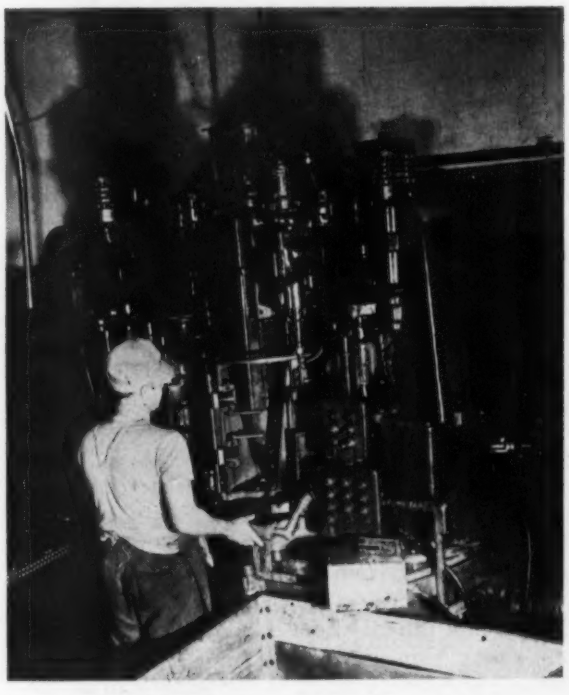
Since the numbers are needed in only small quantities, they are made by hammering sheet lead into the recesses and filing off the lead remaining above the surface. The lead ejected from the recesses is in the shape of the numerals required.

Five Station Kingsbury Makes Shafts

WASHING machines, built in large volume by the Nineteen Hundred Corp., St. Joseph, Mich., have agitator shafts some of which are machined in special Kingsbury machines, shown in the accompanying photograph. This machine has six fixtures each of which is attached to a central table that indexes automatically through five working and one loading station in completing each work cycle. At two of the five stations double operations are performed, hence there are heads for operating seven tools.

The operator need only unload the completed shaft, load another, and see that the machine and tools function properly. Shafts are clamped vertically in each fixture, and operations are performed at each end of the shaft during the cycle.

At the initial work station, the top end of the shaft is drilled and at the second this hole is tapped and part of the keyway is milled at the lower end. The keyway is completed at the third station and a cross hole is drilled. At the four work station, the cross hole is reamed and a slot is sawed in the top end. The cycle requires 32 sec, and production runs 113 shafts an hr.



This special Kingsbury machine with an indexing table carries six fixtures for end working agitator shafts in a single cycle, completing six operations.

THREE NEAT JOBS ON AUTOMATICS

By HERBERT CHASE

Though carburetor parts are made rapidly, close tolerances are held in these interesting setups. One machine with no rotating spindles makes longitudinally slotted shafts; another turns out a tubular jet, including a swaged end.

SEVERAL intriguing operations on small parts for carburetors being manufactured by Rochester Products Div., General Motors Corp., are performed on Davenport automatic screw machines. In one of these, strangely enough, there are no rotating spindles. The job in this case is the production of a longitudinally slotted shaft for a choke valve, the material being ¼ in. brass rod. A drawing of this part appears in Fig. 1 and a photograph of the setup in Fig. 2.

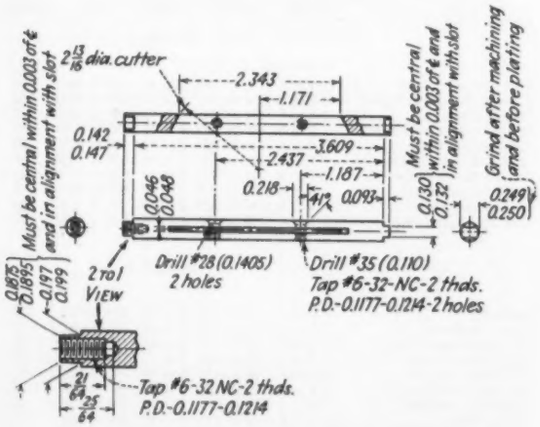


FIG. 1—This carburetor choke shaft is produced complete except for centerless grinding and plating in a Davenport automatic having no rotating spindles.

Operations in this setup are as follows: After feeding out to length, a hole in the outer end is drilled and flats at the opposite end are produced by motor driven cross-fed milling cutters. At the second station, the two cross holes are drilled and countersunk, using combination motor-driven drill-countersinks. These same holes are tapped in the next position. At the fourth station, a thin motor-driven milling cutter is fed radially downward to produce the longitudinal slot. At the same time, the end hole is tapped. Finally, at the fifth station, a rotary saw cuts the piece off because, as the work does not rotate at any station, the usual form of cut-off tool is not applicable.

As the drawing, Fig. 1, shows, many close dimensions are held. Subsequently, the shaft is centerless ground and then is given a hard chromium plating, 0.0002 to 0.0005 in. thick, to resist wear.

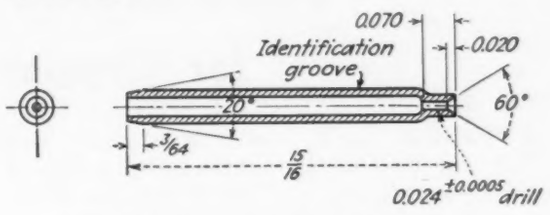


FIG. 2—Pump jet produced in a 1-sec cycle on a Davenport automatic, including the swaging operation on the outer end.

Pump jets, Fig. 2, are made from seamless brass tubing measuring 0.0937 OD and 0.0535 in. ID, the finished length being only 15/16 in. After feeding out in the first position, a carbide die consisting of four separate blocks is fed in from the end to swage the outer end of the tube and reduce its diameter. Remaining operations are fairly conventional and include facing the end, in the second position, spot drilling and chamfering the end to a 60° included angle, in the third position, drilling a 0.026 in. hole within ±0.0005 in. limits in the end (fourth position) and cutting off in the final position. Sixty jets a minute are produced in this Davenport machine.

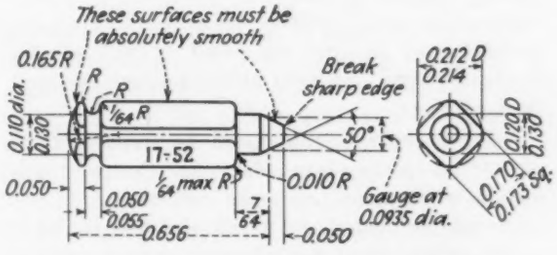


FIG. 3—Monel metal gasoline intake needle with a turned and burnished tapered end and numbers on one flat side. All operations are done in a screw machine.

Unusual in some respect is the gasoline intake needle, Fig. 3, which is made from Monel metal M309 rolled into a square bar that measures 0.170 to 0.173 in. across the flats and has rounded corners. This stock is fed to length and enters the square hole in a chuck containing a number roll.

Continued

Motion of the stock under this roll produces four numerals and a letter on one side face.

In the second position, the spherical end, which was turned in the prior cycle just after cutoff, is burnished to provide a smooth surface free of tool marks. The conical surface angle is held to 50° ±1° and has to be within 0.003 in. total indicator reading of perfect concentricity. Forming from end to end is then done with a carbide tool that, besides producing the neck and adjacent end radius, removes burrs at other points.

No operation is performed in the fourth position but, in the fifth, the angular point is turned after the piece just completed has been cut off. The tool that makes the taper cut is guided in this cut by a true taper on the end of the hollow spindle. Completion of the spherical radius at the back end of the piece is effected by the cutoff tool.

Recommended Sawing Practice for Copper Base Alloys

COMMONPLACE jobs such as power hack sawing or band sawing of bars into slugs or cutting up extruded or rolled shapes into blanks, can often be done with a decrease in costs.

Selection of the proper width of saw, number of teeth, pressure, feed, speed is as important as the condition of the machine involved. Width of hack or band saw is usually governed by type of equipment. It is advisable that blade be wide enough to withstand normal feeding pressures. Correct tension is vital. A loose blade will cause crooked cuts, buckling and twisting as well as stripped teeth. Too great a tension may snap the blade or throw too great a load on the guides or the machine.

Feeding pressure should be determined by size and machinability of the alloy. On gravity or hand fed bandsaw machines, moderate feed is desirable on small sections or readily machined alloys. Increased pressure is recommended on heavy sections or alloys with low machinability ratings to reduce saw wear. Modern power hacksaw machines employ either mechanical or hydraulic feeds permitting increased feed settings on small or soft alloys. Large sections and hard alloys require reduced feed settings.

Correct tooth specification is important to permit adequate chip clearance. Coarse teeth are desiable on soft or large material and finer teeth are indicated on small sections or hard alloys. Care must be taken to insure correct set. If set is worn to any great extent crooked cuts and excessive heat with subsequent saw failure will result.

For bandsawing the copper-base alloys, eight teeth per inch on ¾ wide saws and six teeth per inch on hacksaws, has proved to be a good all-around choice. However, the following Table will aid considerably in experimenting to find the correct saw tooth and speed to step up production. For convenience, the Table is arranged in groups according to machinability ratings.

SAWING SPEEDS

Standard Specification Alloy	Hack Saws		Band Saws		Machinability Rating
	No. of Teeth	Speed, Strokes Per Min	No. of Teeth	Speed, Sfpm	
	GROUP I				
Architectural Bronze	4 to 6	130 to 150	6 to 10	600 to 1000	90
Extra High Leaded Brass	4 to 6	130 to 150	6 to 10	600 to 1000	100
Forging Brass	4 to 6	130 to 150	6 to 10	600 to 1000	80
Free-Cutting Muntz Metal	4 to 6	130 to 150	6 to 10	600 to 1000	70
High Leaded Brass	4 to 6	130 to 150	6 to 10	600 to 1000	90
Leaded Commercial Bronze	4 to 6	130 to 150	6 to 10	600 to 1000	80
Leaded Muntz Metal	4 to 6	130 to 150	6 to 10	600 to 1000	60
Leaded Naval Brass	4 to 6	130 to 150	6 to 10	600 to 1000	70
Low Leaded Brass	4 to 6	130 to 150	6 to 10	600 to 1000	60
Medium Leaded Brass	4 to 6	130 to 150	6 to 10	600 to 1000	70
	GROUP II				
Admiralty	4 to 6	90 to 120	6 to 10	150 to 400	30
Aluminum Brass	4 to 6	90 to 120	6 to 10	150 to 400	30
Cartridge Brass, 70 pct	4 to 6	90 to 120	6 to 10	150 to 400	30
High-Silicon Bronze (A)	4 to 6	90 to 120	6 to 10	150 to 400	30
Low Brass, 80 pct	4 to 6	90 to 120	6 to 10	150 to 400	30
Low-Silicon Bronze (B)	4 to 6	90 to 120	6 to 10	150 to 400	30
Manganese Bronze (A)	4 to 6	90 to 120	6 to 10	150 to 400	30
Muntz Metal	4 to 6	90 to 120	6 to 10	150 to 400	40
Naval Brass	4 to 6	90 to 120	6 to 10	150 to 400	30
Nickel-Silver, 18 pct (B)	4 to 6	90 to 120	6 to 10	150 to 400	30
Red Brass, 85 pct	4 to 6	90 to 120	6 to 10	150 to 400	30
Yellow Brass	4 to 6	90 to 120	6 to 10	150 to 400	30
	GROUP III				
Commercial Bronze, 90 pct	4 to 6	60 to 90	8 to 12	90 to 150	20
Cupro-Nickel, 30 pct	4 to 6	60 to 90	8 to 12	90 to 150	20
Deoxidized Copper	4 to 6	60 to 90	8 to 12	90 to 150	20
Electrolytic Tough Pitch Copper	4 to 6	60 to 90	8 to 12	90 to 150	20
Gilding, 95 pct	4 to 6	60 to 90	8 to 12	90 to 150	20
Nickel-Silver, 18 pct (A)	4 to 6	60 to 90	8 to 12	90 to 150	20
Phosphor Bronze, 5 pct (A)	4 to 6	60 to 90	8 to 12	90 to 150	20
Phosphor Bronze, 8 pct (C)	4 to 6	60 to 90	8 to 12	90 to 150	20
Phosphor Bronze, 10 pct (D)	4 to 6	60 to 90	8 to 12	90 to 150	20
Phosphor Bronze, 1.25 pct (E)	4 to 6	60 to 90	8 to 12	90 to 150	20

Machinability Standard = 100, Free-Cutting Brass Courtesy Bridgeport Brass Co.

Normally, on band saw machines, saw pitch between 6 to 10 teeth per in. will cover the copper-base alloys, and 4 to 6 teeth per in. on hacksaw machines. A good rule in selecting pitch of saw is to decrease the number of teeth for heavy sections and increase the number for thin sections. Light gage sheets and tubing stock require finer teeth than listed in the Table.

HOW TO CONTROL FRICTION and HEAT IN COLD DRAWING

By E. L. H. BASTIAN
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Shell Oil Co., New York

Lubrication plays a vital part in the cold drawing of bars and tubes. Heat generated by friction can be made useful in cold drawing. Recommendations are made for the cold drawing of carbon and stainless steel, copper, brass, aluminum and aluminum alloys.

THE selection and application of lubricants for drawing ferrous and nonferrous bars and seamless tubes depend upon: (1) The metal being drawn; (2) its form; (3) the contemplated final shape and size; and (4) the method of drawing. In addition, pretreatment of the metal surface has a significant bearing upon the type of lubricant used and upon the effects to be obtained in drawing. Cold drawing produces accurately sized parts and finished forms of high physical strength. The strength developed depends upon the metal composition and the plastic deformation of the material as it approaches its ultimate strength.

Effective drawing lubricants reduce friction between dies and work metal, conserve power required for drawing, and minimize detrimental buildup of frictional heat. For any given set of operating conditions in tube and bar drawing, the reduction of sliding friction may prevent a buildup of internal stresses beyond the ultimate strength of the work metal, and consequent rupture. Conversely, a good lubricant reduces stresses and may permit higher drawing speeds and consequently greater production rates.

In one sense, heat can be considered useful in reducing the physical resistance of the work metal to drawing. Control is necessary, however, to prevent excessive thermal expansion of the dies, mandrels, plugs and work metal. Lack of control will result in offsize work. Water cooling of dies is sometimes used to maintain the necessary temperature control.

An important purpose of the drawing lubricant is to prevent welding or galling of the work metal to the dies. High concentrated temperatures causing this detrimental galling and welding can be avoided through proper lubrication. While the physical effects of conventional lubrication and cooling help to eliminate this trouble, the faculty of anti-welding is mainly the result of chemical reactions of the lubricant with the metal surface under the conditions of drawing. These chemical reactions occur at high unit pressures, high spot temperatures, and rapid relative rubbing speeds at the metal interface.

This high pressure anti-welding action is known as E.P. (extreme pressure) lubrication. Its advantages are not only to protect and prolong die life, but to prevent tears, scratches and

other surface defects on the drawn tube or piece. Under conditions of high unit pressure, encountered in tube and bar drawing, the lubricating film formed on the metal surface by chemical adsorption and other chemical means is probably the most tenacious, and most effective of all types.

Several basic types of lubricants are employed in drawbench application: (1) *Water base lubricants;* including emulsifiable oils, soap-fat paste compounds, and pigmented compounds. (2) *Oil base lubricants;* including mineral oils, compounded mineral oils, and fatty oils and fatty acids. (3) *Nonmetallic solid lubricants.* (4) *Soft metallic solid lubricants.* These lubricants possess varying degrees of utility for tube and bar drawing, depending upon the required extent of cooling, lubrication and cushioning demanded for any given work metal and class of operation.

Bar and Tube Drawing Methods

Draw benches, used for both bars and tubes, may be from 60 to 100 ft long, or more, with total drawing force sometimes exceeding several hundred thousand pounds.

Metal tubes are cold drawn or reduced to finished size either in the drawbench or in the tube reducing machine. The latter is a rolling rather than drawing operation. The tube progresses over a conically shaped fixed plug. The outside diameter is reduced by the rocking action of a set of reducing rolls that continually traverse a short length of the tube. The tube is continually rotated, resulting in a uniform action over the entire periphery of the tube.

The tubes are similarly pointed by swaging preparatory to drawing. Dependent upon the metal being drawn, and the reduction taken, drawing speeds vary from 20 to 200 ft per min. Drawing reductions are from 20 to 40 pct per pass for ferrous tubes and from 50 to 70 pct for nonferrous tubes.

There are three general methods by which tubes may be drawn on a bench, (1) *die sinking,* (2) *mandrel drawing* or drawing-over-a-bar, and (3) *plug drawing.*

Die sinking draws a tube through a die without using any sort of tool or die to control the inside diameter or wall thickness. The wall thickness usually is increased in die sinking.

Mandrel drawing, or drawing over a rod or bar, utilizes a round bar inside the tube. It is carried with the tube through the draw die, and is always longer than the drawn tube to facilitate its removal. Both diameter and wall thickness of the drawn tube are accurately controlled.

Plug drawing is used to obtain accurately sized, finished cold drawn tubing. A chrome plated steel or carbide plug die is held stationary in position inside the tube by a long mandrel rod of smaller diameter.

This method is the most severe of the three described in its requirements upon the drawing lubricant. It is not used on small diameter tubing because of the extremely small mandrel rod required.

TYPES OF LUBRICANTS

1—Water Base Lubricants:
- 1a—Emulsifiable oils
- 1b—Soap-fat paste compounds
- 1c—Pigmented compounds

2—Oil Base Lubricants:
- 2a—Mineral oils
- 2b—Mineral-fatty oils
- 2c—Fatty oils and fatty acids

3—Nonmetallic Solid Lubricants

4—Soft Metallic Solid Lubricants

Bar Drawing—Carbon & Alloy Steel

Two general methods of lubrication are used for the drawing of carbon and low alloy steel bars. The first of these, and most commonly used, is the circulation of a drawing oil over the dies and bar during the operation. Usually a medium-heavy mineral oil, S.S.U. 300 to 500 at 100°F, is used. The oil may contain from 10 to 20 pct fatty oil or it may be a heavy sulfurized mineral-fatty cutting oil from the machine shop. The use of fatty oil or sulfurized compound additions to the straight mineral oil for this application is based on the accepted value of such compounds for lubrication at high unit pressures.

The second method is to immerse the bar stock into a dope tank containing an emulsion of soap, fat, water and pigment filler. This is a predip application preparatory to the actual draw. The emulsion used contains a 15 to 20 pct soap fat solids concentration and is held at a temperature of about 140° to 160°F by steam.

Prior to application of the lubricant coating, the hot rolled bars are pickled in a sulfuric acid solution to remove oxides and scale, and then water washed. In some cases a copper coating may be applied before the dope-coating to assist drawing.

FIG. 1—Typical tube drawing application showing pointed tubing gripped in jaws and being drawn through the die by the carriage block. Pipe line is so placed that the lubricant stream covers tubing prior to entrance into die.

After coming from the dope tank the bars are air or oven dried to insure setting up a dry, hard lubricant coating. Sodium soaps are preferred to potassium soaps in this type of compound because of the harder coating obtained. High titre fats are employed for the same reason. The usual types of pigment filler are clay, whiting, talc and mica.

Solid pigments have a cushioning effect between the work and dies. Flat plate-like structures such as mica build up a fish-scale-like coating. Particles, such as clay and the carbonates, crush upon impact to finer sizes. All pigments act as sponges to hold lubricating fats and soaps on the metal surface. The clays are better in this respect than nonfracturable-type pigments such as mica.

Tube Drawing—Carbon & Alloy Steel

Most carbon steel tubing is given a phosphate solution coating before immersion in the lubricant dope tank. As in bar drawing, the lubricant consists of a heavy concentration of a pigmented paste compound heated by steam. In most cases this slurry or emulsion will contain about 5 pct each of sodium soap, tallow or other fat, and pigment filler, the balance being water.

The wet lubricant coating is air or oven dried to a hard film. This coating on top of the phosphate bonding coat serves adequately in practically all cases for the drawing speeds and reductions desired on the drawbench.

The frequency of intermediate anneals necessary to obtain the required final reduction of the tube depends upon steel composition and its work-hardening tendencies. Reductions up to 40 pct can be taken in plug drawing and up to 50 pct in mandrel or rod drawing.

Because of a marked tendency for rapid work hardening and for pickup on forming dies, stainless steel presents special problems in drawing lubrication. Early practice in drawing stainless steel bars and tubes was to apply a soft lead coating as a lubricant. Adherent, readily deformed through the dies, and having reasonably good friction characteristics, the lead coat lubricant serves well as a cushioning agent to prevent galling, welding, metal pickup and scratches. Lead coating is costly to apply and to remove, both in point of time and in cost of facilities for handling. Application is usually by hot dip process, and removal by a nitric acid pickle. Despite its cost, lead coating is still used in many cases where other methods of lubrication have failed.

Another coating used in cold drawing of stainless steel tubing is a patented lithopone-shellac mixture[1] diluted with a solvent. Tubes are predipped in the material, the solvent is evaporated to leave a hard coating, and the tubes are given a final oil dip coat preparatory to drawing. Following the drawing operation, the coating is removed by sulfuric acid and sodium dichromate.

[1] *U. S. Patent No. 2,223,037—Nov. 26, 1940.*

Recent developments showing considerable promise utilize conventional soap-fat-pigment slurries or dopes as a lubricant over pretreated surfaces. Pretreatment processes in this case use molten salts and special hot acid solutions into which the tubes or bars are immersed before going to the dope tank. Heavy chlorinated oil and wax lubricants are also applied to cold drawn stainless tubes and rods. For application purposes, they must be either slightly heated or diluted with a light bodied oil or thinner, such as S.S.U. 100 at 100 neutral or mineral seal oil. For best results mixing should be at 150° to 170°F and by mechanical agitation.

Bar and Tube Drawing—Copper Alloys

Copper, brass, bronze and other copper alloy bars and tubes are cold dawn to finished shape and size with the following general types of lubricant: (1) *Soap-fat emulsions* (predip or circulated), (2) *pigmented emulsions* (predip application), (3) *straight mineral oils* (circulated), (4) *mineral-fatty oils* (circulated), and (5) *greases* (hand swabbed or die block). Copper and brass bars may be given a predip coating in a hot, 140° to 160°F, pigmented soap-fat slurry or emulsion, and the coating air dried preparatory to bench drawing.

Heavy mineral oils, S.S.U. 500 to 700 at 100°F, or mineral-fatty oil blends, containing 15 to 30 pct tallow or lard oil, may be circulated over the dies and bar. An ordinary calcium base grease, or one containing 5 to 10 pct lampblack or other soft filler, may be used as a lubricant at the draw bench. Application is by hand swab or the grease may be carried in a box ahead of the die through which the workpiece passes.

Copper and ordinary yellow and red brass tubing are usually predipped in a dope tank before drawing. The solution, held at a temperature of 110° to 140°F, usually carries a solids

Turn to Page 82

RECOMMENDED DRAWING LUBRICANTS

Metal to Be Drawn	Lubricant Recommended	
	Tube Drawing	Bar Drawing
Carbon and Low Alloy Steel.....	1b* 1c* ...	1c* 2a 2b
Stainless Steel.....	1c* 3 2a 4	1c* 2b 4** ...
Copper and Copper-base Alloys.....	1a* 1b* 1c* 2b	1c* 2b 3 ...
Aluminum and Aluminum Alloys....	2a 2b	2a 2b

* Use in 15 to 20 pct total solids concentration in emulsion form for predip application on stock.
** Precoat application.

Do 85% of your welding jo more easily and ec

WITH JUST 7 TYPES OF G-E EL

Yes, with just seven basic types of G-E arc welding electrodes, you can successfully handle 85% or more of your general welding jobs . . . in many cases doing a better job more quickly and easily. For the remaining "special" jobs, a total of more than 70 G-E electrode types assure you of precisely the right rod for a given application; for general-purpose welding, however, *you can cut rod stocks by standardizing on these basic 7.*

TYPE W-22—AWS E6010, d-c reverse polarity, all positions; recommended for all types of joints in mild steel. Produces welds of excellent appearance, high tensile strength, ductility, and high impact resistance. Typical applications include pipe-lines, shipbuilding, structural frames, tanks and pressure vessels.

TYPE W-27—AWS E6020-30, a-c/d-c, flat and horizontal positions; recommended for high-speed production of butt and fillet welds on mild steel. Permits higher speeds than other production electrodes, making it particularly suited to jobs where distortion must be minimized.

TYPE W-28—AWS E6012, a-c/d-c straight polarity, all positions. Designed for mild steel, general-purpose welding, this electrode possesses a very stable arc without excessive arc force. Excellent fusion, good appearance with minimum convexity, and easy slag removal.

Your G-E Welding Distributor maintains a complete stock of all G-E electrodes to meet your specific needs. Ask him for a copy of the handy, pocket-size G-E Electrode Catalog, GEC-482. Or write. *Apparatus Department, General Electric Company, Schenectady 5, New York.*

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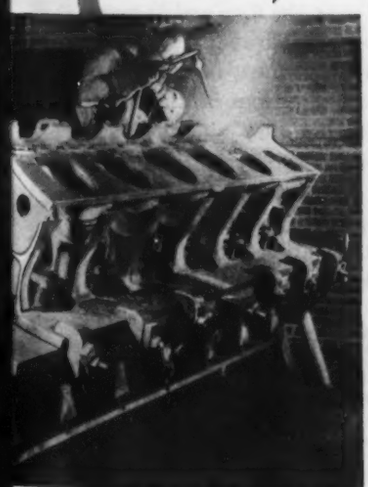
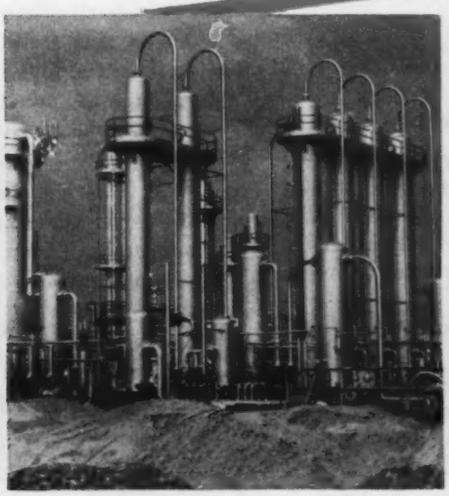
Specifically developed (and recently improved) for making *fully machinable welds* on cast iron, W-2075 is a nickel-core rod that offers such operating advantages as:

1. Greater welding flexibility—either a-c or d-c, all positions.
2. Weld deposits are completely machinable and color matching.
3. Exceptionally stable arc—means smoother operation and weld deposits of machine-like appearance.
4. Increased resistance to cracking.
5. Excellent low-current operation—minimizes brittle heat-affected zone in base metal.

Try W-2075 on your own work and prove it to yourself. Call or write your G-E Welding Distributor for a sample order today.



TYPE W-32—AWS E6016 or E7016 a-c/d-c reverse polarity, all positions; a low-hydrogen electrode providing higher welding speeds, increased impact strength, and greater ductility. Eliminates underbead cracking when welding medium-carbon steels, sulphur-bearing steels, etc.



TYPE W-2347—AWS 347-16, a-c/d-c reverse polarity, all positions. A *stainless-steel* electrode for welding AISI Types 302, 304, 308, and 347 stainless base metal. (For other special types of stainless, G.E. offers a complete line of stainless electrodes to match specific analyses.)

TYPE W-94—For building up or hard-surfacing areas requiring high abrasion and impact resistance, you can't beat W-94. It's an all-position rod especially suited to welding plowshares, hammer mills, scarifier teeth, tractor grousers, rock crushers, etc.

Continued from Page 79

concentration of about 15 to 20 pct of a nonpigmented paste type compound, typical compositions of which may be: Sodium soap, 15 to 30 pct; free fatty oil, 30 to 40 pct; unsaponifiable, 5 to 15 pct; free fatty acid, 1 to 2 pct; and water, 30 to 40 pct.

The sodium soap gives a hard tenacious coating upon drying, and for predip applications is better in this respect than the softer potassium soaps. The unsaponifiable content of this drawing compound may reflect either unsaponifiables as contained in certain fats, degras for example, or

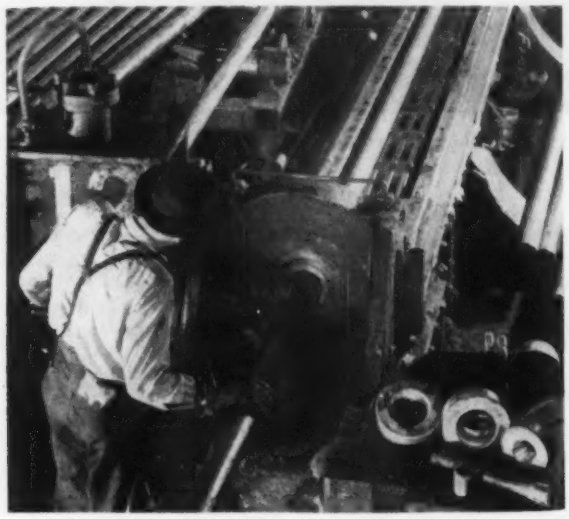


FIG. 2—Where close tolerances are required, stainless steel tubing for chemical and industrial use is drawn through dies and over plugs. Photo courtesy U. S. Steel.

mineral oil. Both the unsaponifiable fatty alcohols and mineral oils serve a useful purpose in such compounds. The free fatty oils and acids present aid lubrication by their physical and chemical adsorption at the metal surface.

Tube Drawing—Cupronickel

Cupronickel and other refractory-type copper alloy tubing is drawn with the same type compound except that it may contain, in addition, from 5 to 15 pct of a light pigment filler, usually talc, colloidal clay, and mica. The pigment gives a more durable coating.

Where an emulsion is circulated over the dies and through the mandrel for plug drawing on the bench, the nonpigmented type compounds should always be used, since pigments would settle out of the solution and eventually clog up lines and piping. If a pigment must be used, a very lightly pigmented compound may be tried. It should contain no more than about 5 pct of filler, and preferable one like mica. In a 15 pct solids concentration solution, there would not be more than about 1 pct of pigment to circulate. This can be handled satisfactorily.

Oils, both straight mineral and mineral-fatty types, are used in circulation systems on the drawbench to lubricate dies, mandrel plugs, and work. Such oils may be used on either precoated or uncoated tubes. In the former, supplemental lubrication is provided. In the latter, the oil replaces other types of lubricant and may be chosen over soap products to minimize stains and deposits in subsequent annealing.

Commercial oils used range from light mineral seal type oils, S.S.U. 45 at 100°F, to heavy viscous bright stocks, S.S.U. 150 at 210°F. Varying blends of these two, or the use of intermediate viscosity oils, sometimes containing up to 2 or 3 pct free fatty acid, are commercially used for copper tube drawing of various sizes.

The increasing volume of small diameter refrigerator tubing being produced in the industry has stimulated interest in drawing oils or lubricants that leave a minimum residue or carbonization inside drawn tubes after annealing.

Bar and Tube Drawing—Aluminum

Aluminum bars, rods and tubes are almost always cold drawn with mineral or mineral-fatty oils. Such lubricants are superior to water base emulsions under the conditions of tube drawing pressures and will not stain aluminum.

Heavy viscosity refined stocks and other residual oils, S.S.U. 300 to 1000 at 210°F, are used on large bar and rod stock. Fatty oil compounds, up to 30 pct tallow, lard or lanoline, are commonly employed in these oils to improve the lubricating characteristics. Sometimes, heavy polymers such as the polybutenes are added to obtain the body desired for heavy draws.

Black residual oils are employed in drawing both bars and tubes. Viscosities are on the order of S.S.U. 200 to 300 at 210°F. The heaviest oils are hand swabbed on bars at the bench. More fluid oils are circulated over the dies and through the hollow mandrel for plug drawing. The oil composition for plug drawing must be such as to insure an even, adherent coverage of the metal surface to be drawn.

In general, the lighter the draw, the less viscous and adherent the oil need be. Pure metals and the softer alloys appear to require more fatty oil compounding than the harder alloys in order to minimize metal pick-up on the dies in such drawing.

Following drawing, aluminum drawing oils are usually removed by a solvent degrease such as trichlorethylene, preparatory to annealing drawn tubes.

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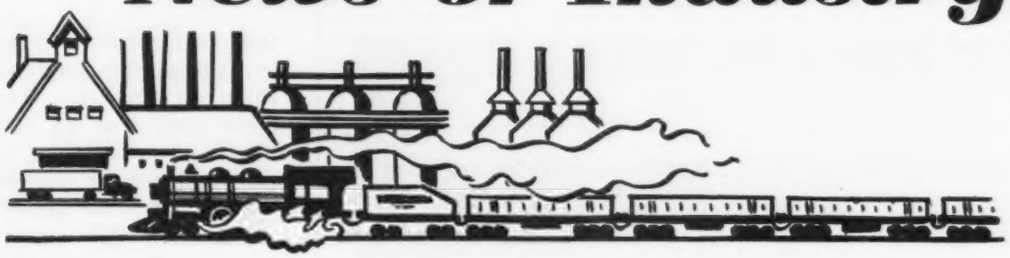


One for Two

Pittsburgh — A million-ton-per-year ore bridge spanning 186 ft across the ore stockyard will be built at the Homestead District Works of the Carnegie-Illinois Steel Corp. before the year is out. It will transfer iron ore from the main plant, across the Monongahela River, to blast furnaces at Carnegie and will replace two smaller bridges grown ancient in continuous service since 1906.

No Current Ore Shortage Possible, States Ernest Weir

Washington—New emphasis on the estimated 8 billion ton deposit of high-grade iron ore in the Damodar River Valley in India was supplied here last week by Ernest T. Weir, chairman of the National Steel Corp.

Testifying before the Celler subcommittee on monopoly trends, Mr. Weir pointed out that this huge deposit forestalls any possibility of an ore shortage "in this day, or in this century."

Expand Assembly Plants

Detroit—Construction on additions to existing Buick-Oldsmobile-Pontiac Assembly Div. plants will begin within 60 days and is scheduled for completion by Nov. 15. The BOP Southgate, Calif., plant is to have an addition of approximately 250,000 sq ft of floor space and the Atlanta, Ga., plant will get some 70,000 sq ft of extra floor space.

Merchant Iron Market Growing Tighter

Shortage threatens as founders feel general business improvement . . . Reduced inventories of iron and shortage of cast scrap are major factors.—*By BILL LLOYD*

Cleveland—A shortage of merchant iron, laggard among the steel industry's products in a period of peak demand, threatens the Michigan, Indiana and Ohio area before the end of the second quarter.

This impending shortage has taken shape during the past month, when demand for merchant iron, previously unaffected by record production of steel and automobiles, began to perk.

Back in Market

A major reason for the heat foundries are putting on pig iron producers for tonnage is the sudden shortage and price of good cast scrap. Big tonnages of this material are generally unavailable.

Also, many foundries, gray iron and malleable, had let their iron inventories get disproportionately low. As a result, foundries that hadn't taken a car of iron for months found themselves back in the market in a substantial way.

Gray Iron Improves

But probably the biggest reason for the pickup in merchant iron demand has been general business conditions, which despite the Chrysler strike, were carrying many a foundry at 3 days a week instead of none.

With Chrysler back in production, many foundries on 3 days a week will go 5 and only overtime will keep them from going to 6.

Apart from automotive demand, producers of agricultural implements, heaters, home appliances and a spate of other strategic consuming industries want castings, which means tonnage. In the East and in the Cincinnati area machine tool builders' castings requirements are moving up.

As a result, gray iron foundries report a 10 to 15 pct improvement over their performance last fall and malleable foundries are up 25 to 30 pct.

This present pickup arrived at a time when merchant iron producers' inventories were depleted by shipments during the coal strike, and there has not been time to replenish these stocks. One merchant iron producer is presently shipping his entire production and dipping into inventory.

Running for Cover

That this is on the way to becoming general was indicated here when one producer stated that while quotas and allocations have not been formally considered, the situation is being watched very carefully. Consumers are not being permitted to overload and inquiries are being compared with past requirements.

Complicating this situation is the fact that a number of foundries dropped their sources of supply last year following the February-March collapse and are now running for cover.

Economists' Harmony Sour to Steel's Weir

Planner Bean says more room in field for new firms . . . Bowman cries monopoly . . . Hunter charges same, adds that more efficiency possible . . . Weir asks for cold facts.

Washington—A quartet of economists chimed in with a denunciatory chorus against the steel industry for tactics of "monopoly" and "lack of capacity" at Congressional probe hearings here last week. But before their last note had died Ernest T. Weir, chairman of the National Steel Corp., countered the charges as being based on "theories and speculation" rather than on "history and facts."

Squawk for More Capacity

An Agriculture Dept. economist, Louis Bean, claimed that steel capacity should be higher, estimating that "there is room" for 20 to 25 new producing firms. As an alternative he suggested that the field could accommodate three new firms, each producing 5 million tons per year if existing producers expand capacity to bring national output to about 110 million tons.

Employed by the Celler subcommittee, Ward S. Bowman, University of Chicago economist, testified that the potential power of any steel company to exercise monopoly control was dangerous. He asked Congress to legislate against it and pointed out that Ben Fairless, of U. S. Steel, in stating that his firm did not charge all the traffic could bear verified the absence of effective competition in steel.

'Break Up Control'

Kenneth Hunter, American University economist, declared that while steel is "not earning inordinate profits, this does not mean that efficiency could not be improved or that the public would not benefit from a more competitive price situation."

Arthur Robert Burns, Columbia University economist, urged decentralization of control over the industry as a measure to increase price competition without raising costs "very much."

Mr. Weir replied to his detractors that "history will support the conduct of steel men" in any debate as to whether the Federal government should now step in to change the economic structure of the steel industry. The Celler group is believed by a number of Congressmen to be laying the groundwork for a Federal divestiture suit against the nation's largest steel companies.

"The burden of proof is not on the steel industry," Mr. Weir declared. "That burden is on those who propose government action to change the industry. And I say they cannot support their position by pointing to a single case in any country at any time where government control of an industry has improved production, quality, or the condition of workers, or has contributed to the public."

Weir said that "anyone who undertakes to bring about such a change takes on himself a terrible responsibility," and that the proponents of government action base their case "not on history and facts, but on their own theories and speculation."

SEEING EYE: A tiny slug of Cobalt 60, radioactive material approved by the Atomic Energy Commission for industrial use, is gently handled by physicist John Widmyer, of Armstrong Cork Co.'s Research Lab. The slug will be used to photograph the 2-in. steel casting placed on a lead-lined film holder to detect flaws.

No Proceedings Seen

Clyde B. Aitchison, ICC member, indicated his view to the subcommittee that the so-called "commodities clause" should be tightened. This clause prohibits railroads from moving products in which it has a financial interest.

He opposed making the "commodities clause" an absolute prohibition against industry-ownership of railroads. He suggested that any tightening amendment should include a provision authorizing the ICC to grant relief from its prohibitory effects in special cases. The effect of his statement was to say that the ICC does not now contemplate any proceeding against steel-owned railroads.

Alco Makes Bid

Schenectady, N. Y.—In a major bid to compete with General Motors, the American Locomotive Co. will now sell through the sales outlets of the General Electric Co. An increase from about seven to more than 300 U. S. sales outlets will be effected by this move.

G. E. will continue to supply electrical machinery and equipment for Alco locomotives and Alco will continue to be the contracting party for all sales of locomotives and renewal parts.

Strike Idleness Declines

Washington—Although new strikes increased from 210 in February to 260 in March, strike idleness for March declined to 3.7 million days, less than half the 7.2 million recorded in February.

Five-Point Small Business Program Proposed by Truman

Washington—The election-year White House program for small business has finally gone to Capitol Hill where it will provide a good talking point but won't be enacted into law, say the experts.

President Truman is proposing a five-point program, (1) Government insurance of bank loans up to $25,000 and repayable within five years, (2) Government promotion and chartering of national investment companies, (3) broadening of the lending powers of the RFC, (4) expansion of the technical and managerial aids now provided by the Dept. of Commerce, and, (5) consolidation of all these activities, including the RFC, within the Commerce Dept., except that supervision of the national investment companies would be under the Federal Reserve Board.

Division Renamed

New York—The Gold Filled Div. of the American Silver Company, Inc., of Flushing, New York, is now called the Rolled Plate Div. The new name was thought to be more in keeping with its work.

Hunt Metals in Sahara

Washington—French geological crews are now prospecting in the Sahara Desert and Atlas Mountains in a hunt for new sources of copper, manganese, lead, and other minerals. Algeria has received over $1.1 million in American machinery and equipment through the Marshall Plan for this work.

ECA Approves Austrian Mill

Washington — The third Alpin Montan, Austria, project to receive '50 ECA approval is the installation of a new rail and structural steel mill. Overall cost is estimated at $6.1 million of which ECA underwrites a third.

Two out-moded mills will be scrapped for the new rolling equipment which will produce 150,000 metric tons. About 25,000 tons of rail and bridge types of steel will be put into export.

New Forge Shop Opened

Torrance, Calif.—National Supply Co. has constructed a new forging shop at its Torrance, Calif., plant. Divided into two sections, there is a hammer forge department consisting of five hammers rated at 1500, 2500, 3500, 5000, and 12,000 lb, a 500-ton forging press, and an overhead crane; and a press forge department with two presses of 1200-ton and 1500-ton capacity, an 11-ton manipulator, and two heavy duty overhead cranes.

Heating furnaces have been provided at each hammer and insulated floor pits have been installed for slow cooling of stored forgings. Each hammer location is readily accessible through the open side of the building.

The set-up of the press department permits simultaneous work on both presses. A forging billet on the 1500-ton press is shown in the photograph.

Weirton Steel Flash Fire Stops Four Electrolytic Lines

Weirton, W. Va.—The second fire in a little over a week caused about $200,000 damage to Weirton Steel Co.'s four electrolytic lines, including a new tin plating unit, and halted production for 2 to 5 days, recently.

An explosion in the oil hydraulic system at the entrance of the new line shot flames to the roof of the building, burning power lines. The new No. 4 line, the industry's fastest, was not in production until 2 days after the blaze.

A week before the tin mill fire, a tank of palm oil caught fire in the Strip Steel Dept. and leaped to the roof, damaging a 200-ft section. A cold mill was damaged.

Allegheny Ludlum Plans Expansion of Plant Facilities

Pittsburgh—A new $23,600,000 plant improvement program, for the next 3 years, is planned by the Allegheny Ludlum Steel Corp. This follows the near-completion of a $30 million 5-year postwar program.

Improvements will include a new wide hot strip mill and additional cold rolling facilities at the Brackenridge, Pa., plant and more cold rolling equipment at the West Leechburg, Pa., plant.

In addition, the company's long-contemplated research laboratory will be built on a site overlooking the Brackenridge plant. It will be of stainless steel curtain-wall construction.

INDUSTRIAL SHORTS

EXPANSION — LLEWELYN ASSOCIATES, INC., engineering consultants and suppliers of steel plant equipment, have moved to larger quarters. The company now occupies a suite at 440-41-42 Oliver Building, Pittsburgh. Previously, the firm occupied an office at 944 in the same building.

NEW SALES OFFICE—A Detroit sales office has been established by the ADAMAS CARBIDE CORP., Harrison, N. J. The office, designed to serve Michigan accounts, is located at 22525 Hoover Rd., Van Dyke, a suburb of Detroit.

RENAMED—The JOHN WOOD MANUFACTURING CO., INC., has changed its name to the John Wood Co. and its plants at Chicago and Conshohocken, Pa., are now known as the John Wood Co. Heater and Tank Div. No management or personnel changes have been made.

TAKEN OVER—AUTOMATIC STEEL PRODUCTS, INC., of Canton, Ohio, has annexed the Cleveland Tapping Machine Co. of Hartville, Ohio. Operation of the plant will continue under its old name.

CANADIAN DISTRIBUTOR—The EDWARD A. HORTON SALES CO., 3071 Bloor St., West, Toronto, Canada, has been named the Canadian distributor for the Streeter-Amet Co. of Chicago. As distributor they will provide both sales and service facilities for the Traficounters and Recording Scientific and Industrial Counters of the Chicago firm.

MORE EXPANSION — A new assembling, warehousing, and distributing plant in Santa Clara, Calif., will be opened by the DEVILBISS CO. of Toledo, Ohio. The idea is to permit carload shipment of paint spraying equipment and related items for assembly at the West Coast plant.

MOVING — The POTTER INSTRUMENT CO., INC., formerly located at Flushing, N. Y., is transferring its operations to a new plant at 115 Cutter Mill Rd., Great Neck, L. I. The firm, which produces electronic counting and computing equipment, will have its sales, research, and manufacturing departments centered at this location.

N. Y. STATE AGENTS—Newly appointed District Representative for the Electric Products Co., Cleveland, Ohio, the VINCENT J. BROWN CO. will promote electrical machinery throughout New York State with the exception of metropolitan New York City. Offices of the Vincent J. Brown Co. are located in Buffalo and Syracuse.

SOLD—I. A. Bennett & Co. of Chicago has been absorbed by NATIONAL ELECTRIC PRODUCTS CORP., Pittsburgh, and is already functioning as a part of that organization. The Bennett firm was founded in 1904 and has been exclusive sales agent for National Electric for 46 years.

STILL MORE EXPANSION—The GOULD STORAGE BATTERY CORP. has moved to larger quarters at 100 East Ohio Street, Chicago.

HEAT RESISTANCE—"Stainless Steel for Heat Resistance" is the title of a new booklet published by the ARMCO STEEL CORP., Middletown, Ohio. It contains a discussion, graphs on high temperature properties of various grades of stainless steel, and general suggestions for choosing the best type of stainless.

WORKERS SHARE—A total of $315,990 of the MINNESOTA MINING & MANUFACTURING CO.'s first quarter profits was paid to its 6540 workers under a general profit sharing plan. The payment was the 53rd consecutive quarterly profit sharing distribution made by the company.

G.E. Offers New X-Ray Rental Service to Industry

Milwaukee — General Electric X-Ray Corp. has a novel plan offering "packaged" X-ray service covered by a single monthly charge. The service is complete with equipment, maintenance, repair parts, tubes, and instruction.

The plan provides industry with the advantages of X-ray testing and detection, and eliminates the risks encountered in purchasing expensive equipment, G.E. claims.

Plan $25 Million Chemical Plant

Washington—The newly-organized Mathieson Hydro-carbon Chemical Corp., of Baltimore, plans to build a $25 million plant to make organic chemical products from gas. The program calls for a $11.6 million main chemical plant; $6.6 million for site and general facilities; $5.5 million for a chlorine plant; and $1.3 million for a natural gas pipeline.

Koreans to Teach Metal Courses

Washington — Welding, steel fabrication, and sheet metal work are among the courses to be started at the new Korean Technical Institute, opening July 1. Twenty-three American instructors will spend 1 year there under a $475,000 Marshall Plan allotment.

Monarch to Show Machining Film

Cleveland—More than a mile of movies is now being completed by the Monarch Machine Tool Co. of Sidney, Ohio. The nine reels will show various representative machining operations in which maximum productivity is being achieved with high economy.

Gearing Volume Rises

Pittsburgh — Volume for the gearing industry shows a March increase of 31.3 pct in the American Gear Manufacturers Assn. index. Years 1935-39 are equal to 100. March's index figure was computed as 358.4.

Steel Imports Cut Prices In Canada, Says Steel Co. Head

Hamilton, Ont.—Steel imports from overseas are underselling the domestic products and constitute a threat, said H. G. Hilton, president of the Steel Co. of Canada Ltd., at the firm's annual meeting.

He commented that imported pig iron and rolled steel products are selling at prices well below Canadian levels which themselves are lower than the transported cost of American imports.

Canada Steel Co. customers are meeting declining export markets and mounting competition from abroad for the domestic market, he said, but noted that his company's production and sales of all hot-rolled items had been running at maximum capacity since Jan. 1 and that demand surpassed production. Business has continued to drop in some other products, he said.

American Screw Co. Moves

Willimantic, Conn.—The 3-year migration of the American Screw Co. from its 112-year home in Providence to Willimantic is now complete. Main departments are now housed under one roof 50 miles west of Providence and 85 miles southwest of Boston on 87 acres. The firm produces all types of American Phillips and slotted fasteners.

Steelmen Argue Benefits Of Seaway Before House Committee

Washington — Another Mesabi will become available to the American steel industry which needs the $800 million proposed St. Lawrence Seaway for economic and efficient utilization of Labrador iron ore reserves, argued three steel company officials at a Congressional hearing last week.

Use Same Transportation

Norman W. Foy, Republic Steel Corp. general manager of sales, told the House Public Works Committee that the project was a "national necessity" to hold steel prices down and check a dislocation of industry. He favored a "fair toll charge" on ore cargoes through the Seaway.

W. W. Sebald, Armco Steel Corp. president, said that "our entire economy" would benefit, not only special groups of companies and areas.

Pointing out that the Great Lakes ore fleet can course up the entire route to Seven Islands, Quebec, except for 100 miles just west of Montreal, George M. Humphrey, M. A. Hanna Co. president, said that if at this point the Seaway is completed to a depth of 27 ft, the Lakes fleet could transport Labrador ore over the same facilities handling Lake Superior district ore.

Study in Zinc Bares Uneasy Market Plight

Mine production cannot keep pace with quickened consumption . . . Worldwide shortage to continue . . . Zinc Institute speaker urges new discoveries.—*By JOHN ANTHONY.*

New York—Producers and consumers have taken a foreboding outlook on the long term future of zinc. They were prodded into study of the zinc situation by repeated price advances.

They find that comparatively scant mine production cannot cope with heightened industrial consumption and that present worldwide shortages will continue to plague the zinc market.

Mines Stay Closed

At the recent St. Louis meeting of the American Zinc Institute, Howard I. Young, president of American Zinc, Lead & Smelting Co., joined R. L. Wilcox, chief of the ECA Nonferrous Metals Branch, in predicting that the shortage of concentrates would jeopardize slab zinc recovery by domestic and foreign smelters.

Inability to reduce high postwar costs in 1949's declining zinc and lead market led to the shutting down of some mines. Rising prices now have increased domestic zinc production but the damage of closing mines last year cannot easily be remedied. Reopening costs are heavy and once closed, a zinc mine stays closed. When mines are highgraded, by discarding lower grade ore, to meet low market prices, the by-passed ore is generally not recoverable.

Zinc Stocks Drained

The return of zinc prices as towering as in 1948 and early '49 is not expected because competing metals might make incursions into the field. Since lead, a byproduct of zinc mining, continues low, high prior rates of zinc production are not expected to be restored. The supply of lead is now considered adequate.

World zinc stocks were drained in the past 2 years which saw disparities in the rates of mine and smelter production, accounting for decreases of 39,000 and 105,000 mt of recoverable zinc in 1948 and 1949, respectively. Use of 130,000 and 150,000 mt of zinc a year from concentrates and residues for American Process zinc oxide and lithophone further de-

"Easy, Frank. You took that corner on ten wheels."

pletes world stocks of zinc ore.

In his St. Louis address, Mr. Wilcox stressed that increased mine production by discovering new zinc deposits could detach the zinc market from the horns of its present dilemma. He did not see an immediate production rise within the next few years.

Reduce Smelting Activity

Mr. Young estimated that America must import concentrates for 350,000 tons of slab zinc, or 750,000 tons of foreign concentrates to be added to domestic production of from 550,000 to 600,000 tons to fill the smelting need this year.

In the first 2 months of '49, 40,000 tons of zinc were imported. Thus imports for the balance of the year must be increased substantially to maintain the smelting rate here. Increased imports are not expected to materialize, however, and signs point to reduced smelting activity.

Widespread devaluation of foreign currency and unused smelting capacity abroad will probably result in the greater use of foreign concentrates abroad. This slab zinc will be exported here with a larger dollar realization abroad.

GSA Branches Out

Washington—For economy, efficiency, and to bring the agency closer to manufacturers, regional offices of the General Services Administration, chief government procurement agency, are being established in Boston, New York, Atlanta, Dallas, Kansas City, Chicago, Denver, San Francisco, and Seattle.

Elects New Officers

Birmingham—The Birmingham District Chapter, American Foundrymen's Society recently elected Morris L. Hawkins, superintendent of foundries for Stockham Valves & Fittings, to the post of chairman. Also elected were Charles K. Donoho, vice chairman, and Fred K. Brown, secretary-treasurer.

MANGANESE—Scant Surplus for Stockpiling

Dr. Boyd, Bureau of Mines, warns that while industry has its fill, stockpile goes begging . . . Industry advised to increase development sources.—*By KARL RANNELLS*

Washington—The national stockpile is getting scant leftovers of manganese, important ingredient in steelmaking, after American industry has had its fill, said Dr. James Boyd, Bureau of Mines Director, before a Congressional group recently.

The Bureau of Mines is now urging industry to more intensive efforts in increasing manganese sources and production and hinted that governmental assistance might be in the offing if needed in domestic development. Officials warn that the present small surplus situation may extend over 5 years.

Imports of Manganese Ore

(By percentage and by country of origin, 1948-1949.)

	1948	1949
Total long tons, add 000	1,124	1,379
India	16.7%	27.3%
Union of South Africa	17.3	24.3
Gold Coast	10.6	23.6
Brazil	11.4	9.6
Russia	34.3	5.2
Cuba	2.7	3.9
Mexico	4.9	3.8
All Other	2.1	2.3

Russia Won't Ship

The Bureau advised industry to push mining and development of both foreign and domestic deposits. Domestic production should be expanded without regard to lower prices on foreign markets.

Dr. Boyd said that America, which imports 90 pct of its manganese, has enough for its industry but not enough for the stockpile. Commerce Dept. officials blamed high steel production and Russia's withdrawal from the ranks of manganese shippers as the crux of the shortage.

During and after World War II Russia regained its position as a major manganese supplier but in 1948 the Soviets with tongue-in-cheek announced that they could no longer fill commitments. Since that time, the USSR has shipped token quantities, and in some months not a grain.

Russian shipments totaled only 79,000 tons in 1949, Commerce Dept. figures indicate. They also show that for the year Gold Coast shipments increased 213,000 tons, Indian supplies were up 195,000 tons, while South African shipments increased by 122,000 tons.

Gold Coast Developed

Between wars Russian and India slipped out of the picture as the giants in manganese export. With Brazil the countries had once supplied 96 pct of world production. Great deposits were exploited in the Gold Coast and as the world's largest consumer, the United States imported an average of 650,000 tons during the five prewar years. More than a fourth came from the Gold Coast.

Wartime expansion of steel production doubled U. S. import requirements to a peak of 1.3 million tons. Instead of postwar cutbacks, steel output has continued at high levels. Manganese imports in 1949 were nearly 1.4 million tons, higher than the wartime average.

Manganese in Slag

U. S. supplies are likely to be restricted to current sources—Brazil, the Gold Coast, India, Union of South Africa, and minor sources. Both the government and private industry are assisting in development of such deposits.

Reserves in Brazil are under development by both U. S. Steel Corp. and Bethlehem Steel Corp. But time will be required for in-

creased output. Efforts are being made to help increase production of British-owned facilities in India. Other Indian production has been aided by transportation equipment.

South African production has also been raised by shipment of railroad cars for transportation of ore. Other aid is to be extended in developing known reserves.

The Bureau of Mines is investigating the avenues or possibilities of recovering manganese from open hearth slag containing roughly 10 pct manganese. It could potentially supply a large portion, perhaps half, the nation's requirements if an economical means of recovery can be found.

New England Employment Rises

Boston—New England employment for March increased by 12,500 jobs over February, but was still 68,600 less than March 1949. New England employment is now 3,077,600.

Manufacturing accounted for 5400 of the new jobs with 4500 of these in the manufacture of electrical and non-electrical machinery and in metalworking. Non-electrical machinery showed a drop of 21,900, the biggest decline from 1949. Textile mill products showed a gain of 15,500, the largest increase. Employment in the construction industry for March was 2700 less than February.

Rail Spending Climbs in '49

Washington — Capital expenditures by class I railroads in 1949 for equipment and other improvements totaled $1,312,200,000, the highest on record. Spending was 3 pct more than 1948 and 53.7 pct more than 20 years ago. The year to year increase was also the highest on record. Roadway and structures spending, however, dropped to $330,880,000 from $356,035,000 in 1948.

In the first quarter of 1950 railroads have ordered almost 300 pct more freight cars and nearly 150 pct more diesel locomotives as compared to the same period last year.

Diesel Orders Soar

Lima, Ohio—Forty-six diesel electric locomotives were ordered from the Lima-Hamilton Corp. in the first 4 months of 1950, as many as were ordered in the entire year of 1949, announced Dan S. Ellis, president. Customers are the New York Central, Cincinnati Union Terminal, Erie, Nickel Plate, Wabash, New Haven railroads, and a steel firm.

Business Session Votes Pick duPont as Metal Powders Head

Detroit—B. T. du Pont, sales manager of the Plastic Metals Div., National Radiator Co., was re-elected president of the Metal Powder Assn. at the group's annual business meeting held here recently. Re-elected vice-president was T. L. Robinson, of the Wel-Met Co.

Other officers are: W. P. Schenck, superintendent of the Scrub Oaks Div., Alan Wood Steel Co., chairman of the board; T. L. Robinson, and H. W. Fischer, American Electro Metal Corp., newly-elected directors; and E. P. Palmer, Metals Refining Co., W. P. Schenck, who continue as directors.

Receives Navy Contract

Washington — Polan Industries, Huntington, W. Va., has been awarded a Navy contract to process and repair some 3200 machine tools held in storage by the service. A fixed fee will be paid for the work which, together with estimated material cost, will approximate $477,500.

Plan New Pension System

Cleveland—A new pension plan is being worked up for employees of the Cleveland Cap Screw Co., said Joseph W. Fribley, president, at the firm's fifth annual service party. The firm, employing about 400, expects near capacity operations for the next 8 months.

Pressed Steel Car Co. Buys Three Firms Outside Its Field

Chicago—Spurts and slumps in the railroad car building business often depress its constituents. To level off the peaks and valleys of production, the Pressed Steel Car Co., Inc., is branching out into other pastures with a greater degree of stability.

John I. Snyder, Jr., president, disclosed the acquisition for cash of three manufacturing companies: Rice & Adams Corp., Buffalo, producers of milk can washing and dairy equipment; C. R. Jahn Co., Savanna, Ill., makers of low-bed truck trailers; and the Erie Manufacturing Co., Inc., Chicago, claimed to be the world's oldest and largest producer of automobile radiator grille guards.

RFC Grants $13 Million Loan

Washington—A $13 million loan to the Glenn L. Martin Co. of Baltimore for equipment and working capital has been approved by the Reconstruction Finance Corp.

Other March loan applications approved went to the East Tennessee Natural Gas Co., of Chattanooga, $3.2 million; National Steel & Shipbuilding Corp., of San Diego, $1.25 million; and Gemco Eng. & Mfg., Inc., $2 million.

Also, Brinkley Mfg. Co., of Warrenton, Mo., $650,000; Builders, Inc., Wichita, $600,000; Fort Metal Products Corp., Fort Logan, Colo., $568,000; and Connecticut Telephone & Electric Corp., Meriden, $500,000.

Plastics Society Elects Gooch

Hot Springs, Va.—The Society of The Plastics Industry, Inc., recently re-elected Mr. Horace Gooch, Jr., to the office of president. Mr. Gooch, long active in the industry, is treasurer of the Worcester Moulded Plastics Co., Worcester, Mass.

Anticipated by Mr. Gooch is a 10 pct increase in production of plastics raw materials for the year. This will bring the total production to approximately 1,650,000,000 pounds in 1950.

Viewing the News from

The ECONOMIC SIDE

By JOSEPH STAGG LAWRENCE

The 1950 Boom

THE business and financial community is once again in a state of uneasy optimism. All the standard gages by which the health and prospect for business are measured almost without exception present a favorable showing.

During the first quarter more motor vehicles were sold than in any other similar period in history; a total of 1,636,000 units, representing a 19 pct advance over the similar 1949 quarter. Housing starts likewise reached a new peak of 270,000 for the quarter, a 60 pct gain over the similar period in the preceding year. An active demand has developed for machine tools and nonferrous metals.

The general yardsticks with which we measure business health are likewise reaching postwar peaks. The Federal Reserve Board Index for March, at 186, is two points above the March level for 1949 and only nine points below the postwar top reached in October and November of 1948. The wholesale price level has shown striking stability during the past 8 months, varying within a narrow range at a level slightly more than 50 pct above the 1926 base.

Finally, the stock market has been turning in a performance which has many of the more conservative analysts thoroughly confounded. With high volume since the first of the year running in the aggregate at more than double the volume for the same period of 1949, the market has touched and in recent weeks held to the highest levels of the last 20 years.

This spectacular emphasis upon the good health and outlook of business has had a striking effect upon business sentiment. The head of National Steel, who recently expressed fear that the steel industry might have difficulty in justifying its present enormous capacity, is now convinced that this capacity will be well used during the balance of the year and that the year as a whole will turn in a new production record. U. S. Steel apparently is going ahead with an expansion program which may call for a total outlay of a half billion dollars.

In spite of this pleasing record, it is difficult for the serious student to forget history. Prior experience proves the ease with which the public can accept new-era thinking. There is great danger at the end of a decade of unparalleled prosperity that the public may assume the indefinite continuation of full employment, high prices, good earnings, and boom prosperity.

It is hard to forget that the present level of business is 86 pct above the average for the 1935-39 period and is 69 pct ahead of the peak touched in 1929. Commodity prices are currently 98 pct above the level of 1939. The stock market today is fifty points, or approximately 30 pct, above its position at the time of the Japanese surrender.

These facts suggest that the first-half boom of 1950 be accepted as a gift from Providence; that its indefinite continuation may be assumed only by defying and ignoring the record—and at great risk.

The burden of proof that we are enjoying now a new normal level is clearly upon those who make that assumption. To follow such reasoning compels the abandonment of most of our theories regarding the business cycle and the acceptance of logic now prevalent in high quarters in the Capital that deficit financing, artificially low interest rates, supported government bond prices, high minimum wages, lavish relief expenditures, farm support policies, and cheap construction credit have made possible the miracle of continuous high level prosperity.

British Rails Pass Rate Boost Buck to Steel Industry

London—The rocketing of nationalized railroads into the red at a clip of $1,400,000 a week has long disturbed the sleep of Transport Commission members who on May 15 will pass the problem like a hot potato to steel and other industries.

Steelmen say that their profit margin cannot cover rate rises representing roughly $1.40 per ton on the cost of steel—which would hit the industry $14 to $17 million per year. They are juggling the Commission's hot potato before passing it into the hands of the consumer who will be the one to be burned.

Coal to Go Up

Iron and steel manufacturers will explain why prices of steel and other products must go up immediately to compensate for the increases. Their apologia will be submitted to the government also on May 15.

Fellow sufferers with steel, who must also pass their malady down the line, are coal, gas, and electricity. Coal may go up by an average of 21¢ for the country and 42¢ in London.

Ford Ore Ships Make First Trip

Detroit—Ford Motor Co. iron ore ships, the Henry Ford II and the Benson Ford, started the first of their 1950 shipping season's 45 round trips to Northern Michigan and Minnesota to cart 1,200,000 tons of ore, or 300,000 tons above the '49 total.

Ford also expects delivery of about 50,000 tons of Brazilian ore to the Rouge docks. The ore will be transferred to Lake vessels from Montreal.

Byers Co. Profits Sink

Pittsburgh—Net income of the A. M. Byers Co. for the first quarter was $167,969, compared with $564,800 in the first period of 1949. Lack of pig iron and coal due to the coal strike affected company operations in February and March.

Montreal Locomotive Converts To Diesel Production from Steam

Montreal—Realizing that orders for steam locomotives will hover about the zero point because countries needing the product are hamstrung in buying by their inability to get American and Canadian dollars, the Montreal Locomotive Works is shaping up its steam facilities for a transition to line production of diesel locomotives.

Previously, the firm had converted some of its shops to the production of heat exchangers, vessels and pipe for the Canadian petroleum industry. Mr. Fraser sounded a note of doom for the steam locomotive by saying that Canadian railroads are convinced of diesel power economy and are planning to convert fully.

Industry Recalls Workers

Washington—Industry recalled nearly 4 pct as many laid-off workers in March as it then had on its payrolls, the Bureau of Labor Statistics reports, and the quit rate was at a new postwar low.

Recalls rose to 38 per thousand workers, the hiring rate to 44, the lay-off rate continued at 17, and quit rates now stand at 12 per thousand employed.

Retires from Dreifus Firms

Philadelphia — C. E. Wright, since 1941 vice-president of Charles Dreifus Co. and Dreifus Steel Corp., is retiring from these firms following their recent sale. He plans to do free lance business writing with Florida as his headquarters. From 1917 to 1941 he was on the editorial staff of THE IRON AGE.

ASTE Committee Appointed

Detroit—A committee has been appointed to coordinate plans for setting up of the American Society of Tool Engineers Research Foundation, reports Herbert L. Tigges, president. On the committee are: A. M. Sargent, William H. Smila, Professor O. W. Boston, and Professor J. N. Edmondson.

Didn't Make It

Pittsburgh—Two years short of its 100th birthday, the Dilworth-Porter Div., Republic Steel Corp., will shut down in August. Equipped only for the production of railroad tie plates, the plant has been running at half capacity for the past year, and since prospects for future business are dim, management sees no logic in continued operation.

New Freight Car Orders By Class I Roads Quadruple in '50

Washington — Railroad orders in the first quarter of 1950 increased over the same period in 1949. The Assn. of American Railroads reported that Class I roads and railroad controlled private refrigerator car companies ordered 20,725 new freight cars, nearly four times as many as ordered in first quarter '49.

Class I roads also ordered 685 new diesel locomotives as compared with 198 in 1949. Increased traffic has also resulted in extensive car repair programs and 13,000 cars have been restored to service which were unserviceable two months ago.

"Hey, Ed. I bet you'll never guess what makes this press tick!"

Brazil Blessed with Bauxite Plans to Sire Aluminum Industry

Estado do Rio, Brazil—With its bauxite deposits, water power, and coke, Brazil can sire a thriving industrial offspring in aluminum. It took its first step in paternity recently when the Ministry of Agriculture approved plans for the building of an aluminum factory in the State of San Paulo by the Companhia Brasileira de Alumino.

The projected plant will cost $13,565,000 and produce 7000 tons of ingots yearly for sheet, tubes, cable, etc. Technical assistants will be lent by the United States.

Factors Favorable

Brazil's exploitation of its 70 bauxite deposits thus far have been piddling. In 1949 it amounted to 14,044 tons valued at $57,277. Deposits at Pocos de Caldas are estimated at 120 million tons of export standard ore. Only 13,850 tons were removed last year. The Pocos de Caldas plateau, with an area of 386 square miles, is one of the three largest masses of nepheline rocks.

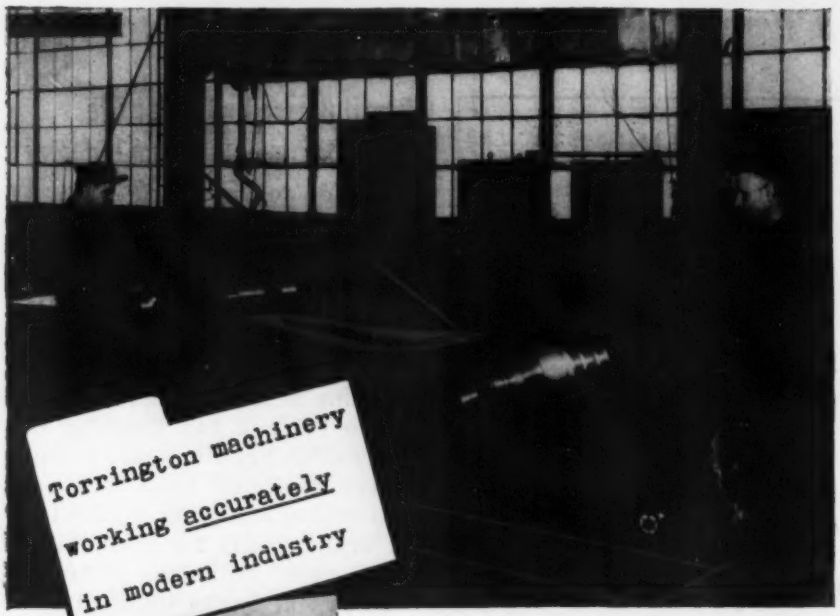
Aluminum Imports to Fall

London—British aluminum imports in 1950 will slump, indicated the Ministry of Supply in announcing that 96,000 tons of virgin aluminum will be purchased from the Aluminum Ltd. of Canada this year.

Total Canadian imports of aluminum in '50 are expected to reach about 136,000 tons. The Ministry said that in 1949 imports of 161,000 tons lifted stocks "above the level considered necessary," necessitating a reduction.

Lower Lake Port Gets First Ore

Cleveland—The first Lake Superior iron ore cargo to be unloaded at a lower lakes port this season went to the National Tube Co. docks, at Lorain, Ohio, on May 2, reports the Pittsburgh Steamship Co. The ore, 12,535 gross tons, was aboard the steamer, Clyde, which left Two Harbors, Minn., on Apr. 28.



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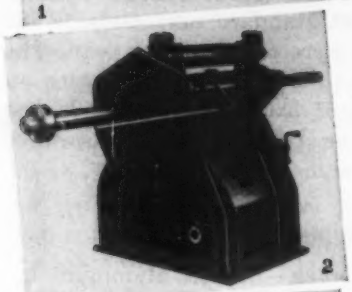

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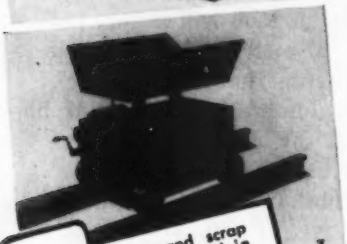

3

1: Slitting unit and scrap cutter, self-contained in welded steel base, with tilting entry guide.
2: Winder with variable speed transmission and power stripper.
3: Discharge buggy with motor-operated elevator.

3 GANG SLITTING LINES Increase Production in the Detroit Branch of AMERICAN BRASS COMPANY

Three identical, high-speed slitting lines designed for light gauges, have been installed to replace old equipment in American Brass Company's Detroit branch. This heavy duty machinery combines famous Torrington standards—advanced design, dependable accuracy and the ability to withstand abuse under continuous heavy service. This machine combines slitting unit and scrap cutter, winder and discharge buggy. Outstanding features are:

- **Speed adjustable from 335 to 1005 feet per minute**
- **Anti-friction bearings**
- **Tilting entry guide for complete access to front of slitter in setting up**
- **Rotary head on blocks scrap cutter**
- **Arranged for winding metal on various diameter mandrels**
- **Variable speed transmission in winder to accommodate different winding diameters**
- **Adjustable tension on metal being wound**
- **Air-operated stripper to remove finished coils**
- **Motor-operated elevator on discharge buggy**

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DESIGNERS AND BUILDERS OF MILL MACHINERY FOR OVER 60 YEARS

News of Industry

STEEL CONSTRUCTION NEWS

Fabricated steel awards this week included the following:

20,800 Tons, Passaic County, N. J., New Jersey Turnpike Authority, Contract 20, Passaic River bridge, Bethlehem Steel Co., Bethlehem, low bidder.

1800 Tons, Brooklyn, N. Y., Joseph Schlitz bottling plant, to Lehigh Structural Steel Co., Allentown, Pa.

15,500 Tons, Hackensack, N. J., New Jersey Turnpike Authority, Contract 17, Hackensack River bridge, American Bridge Co., Pittsburgh, low bidder.

1540 Tons, Allegheny County, Pa., Plum Creek Viaduct, Pennsylvania Turnpike Authority—western extension, to Bethlehem Steel Co., Bethlehem.

1320 Tons, Westmoreland County, Pa., Brush Creek Viaduct, Pennsylvania Turnpike Authority—western extension, to Bethlehem Steel Co., Bethlehem.

1300 Tons, Burlington County, N. J., New Jersey Turnpike Authority, Contract 28, Union Building & Construction Co., Passaic, N. J., low bidder.

825 Tons, Allegheny County, Pa., Willow Run Viaduct, Pennsylvania Turnpike Authority—western extension, Contract 30d & 30e, to Fort Pitt Bridge Works, Pittsburgh.

770 Tons, Whiting, Indiana, power plant for Standard Oil Co. of Indiana, through Stone and Webster Engineering Corp., Boston, to American Bridge Co., Pittsburgh.

750 Tons, Coram, Mont., Bureau of Reclamation, power house, Hungry Horse Dam Spec. 2956, to Virginia Bridge Co., Roanoke, Va.

700 Tons, Chicago, central boiler plant for medical center, through Stone and Webster Engineering Corp. to American Bridge Co., Pittsburgh.

450 Tons, Miami, Fla., auditorium for Dade County, to O'Neal Steel Works Co., Birmingham.

400 Tons, Stockton, Ill., factory for Stockton Mfg. Co., to Wisconsin Bridge and Iron Co., Milwaukee.

380 Tons, Madison, Wis., stadium addition, to Theo. Kupfer Foundry and Iron Works, Madison, Wis.

365 Tons, Franklin Park, Ill., dairy building for Dean Milk Co., to Wendnagel and Co., Chicago.

275 Tons, Queens, N. Y., apartment house, to Grand Iron Works.

250 Tons, Birmingham, athletic field lighting towers for Birmingham Park and Recreation Board, to O'Neal Steel Works Co., Birmingham.

172 Tons, Virginia, transmission tower sub stations for Virginia Electric and power Co., through Stone and Webster Engineering Corp., to Belmont Iron Works, Bristol, Va.

150 Tons, Joliet, Ill., building for Blockson Chemical Co., to Jos. T. Ryerson and Son Co., Chicago.

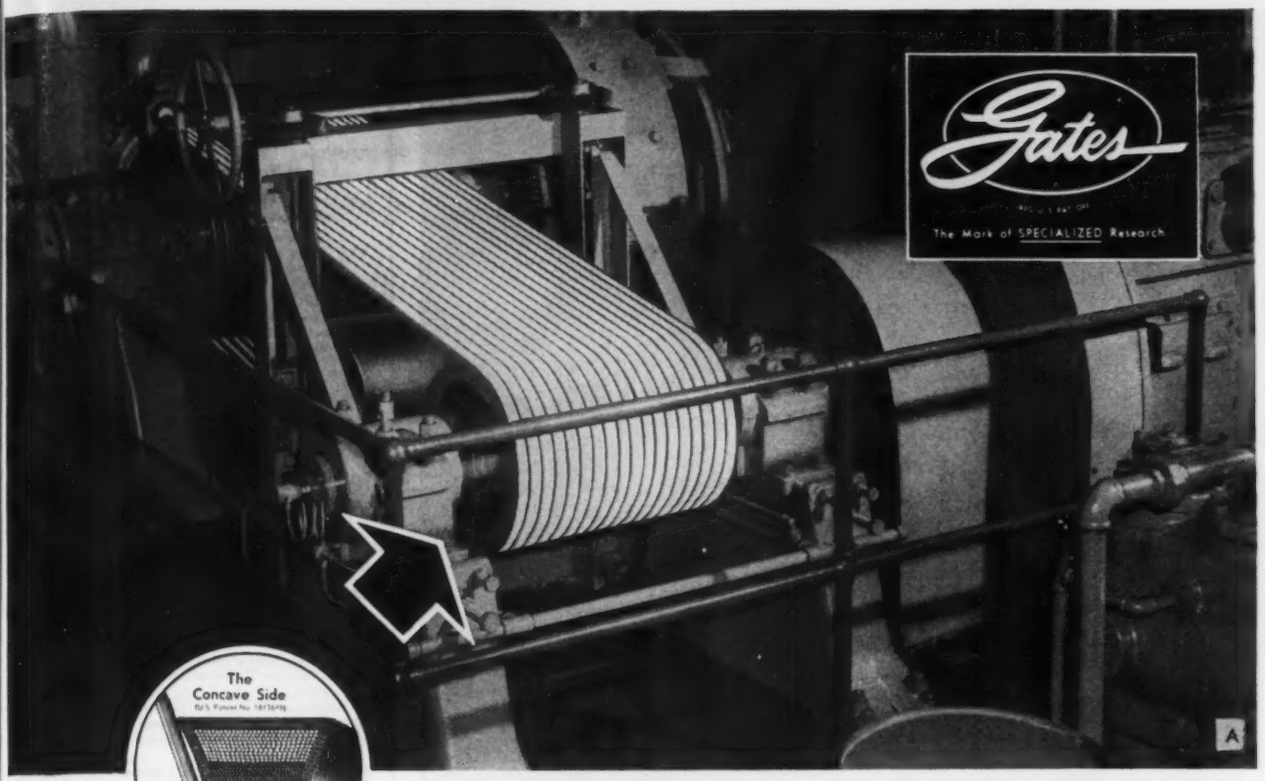
145 Tons, Chicago, office building, C. W. Haines Co., contractor, to New City Iron Works, Chicago.

140 Tons, Minneapolis, diesel engine house, to American Bridge Co.

130 Tons, Northampton County, Pa., Easton approach to Delaware River Bridge, Joint Toll Bridge Commission, Union Building & Construction Co., Passaic, N. J., low bidder.

Fabricated steel inquiries this week included the following:

1328 Tons, Berkeley, Raynham and Taunton, Mass., Boston to Fall River, Mass., Expressway, bituminous concrete and bridges. F. A. Chase, Taunton, Mass.



When the engineers in a New York machinery plant were faced with the problem of driving an auxiliary generator from an engine, powering an air compressor, they worked out this interesting drive arrangement. "The Gates Vulco Rope Drive made it easy for us to set up a completely adaptable power arrangement," says the plant engineer.

Here is exactly ***WHY*** the Concave Side Saves You Money in V-Belt Costs

When *any* V-belt bends in going around its pulley, it is forced to *change* its *shape.*

Naturally so, because the top of the belt is under tension and grows *narrower* while the body, under compression, *bulges out!*

This change of shape in a *straight-sided* V-Belt, is shown in figures 1 and 1-A—and you will note how the bulging sides press *unevenly* against the V-pulley.

Now look at figures 2 and 2-A. There you see how this change of shape, due to bending, affects the belt that is built with the Concave Side—the Gates Vulco Rope. The precisely engineered Concave Side exactly corrects the side-bulge—and the bent belt *has a shape that exactly fits its sheave groove!*

Two distinct savings result. *First*—There is no side-bulge to cause uneven wear. The sides press *evenly* against the V pulley and therefore wear *uniformly*—resulting in *longer life!* Second—The *full width* of the sidewall grips the pulley—thus carrying heavier loads without slippage—and this *saves belts* and also saves *power!*

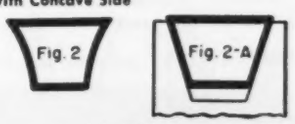
When you buy V-Belts, be sure you get the V-Belt with the Concave Sides... the Gates Vulco Rope!

What Happens When a V-Belt Bends

Straight-Sided V-Belt

How Straight Sided V-Belt Bulges in Sheave-Groove. Sides Press Unevenly Against V-Pulley Causing Extra Wear at Point Shown By Arrows.

Gates Vulco Rope with Concave Side



No Side Bulge. Precise Fit in Sheave Groove. Sides Press Evenly Against V-Pulley—Uniform Wear—Longer Life!

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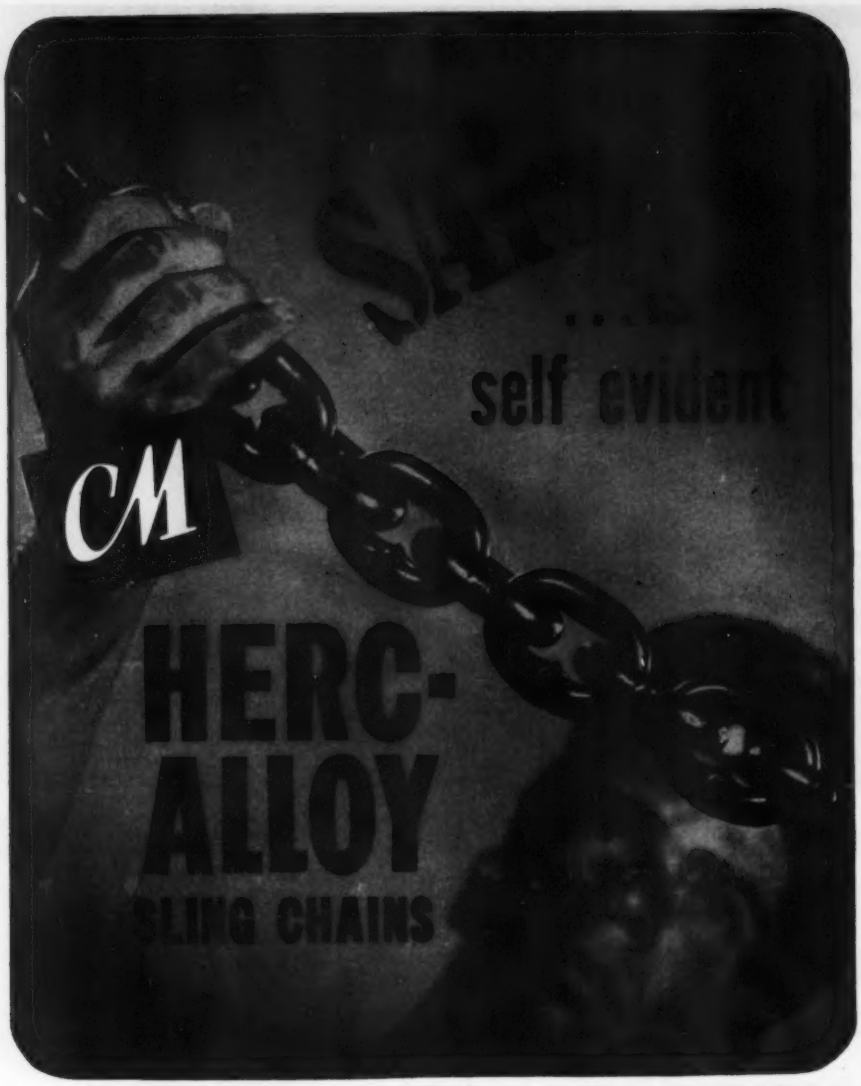
DENVER, U.S.A.
The World's Largest Makers of V-Belts

GATES VULCO ROPE DRIVES
Engineering Offices and Jobber Stocks **IN ALL INDUSTRIAL CENTERS** of the U. S. and 71 Foreign Countries



HERC-ALLOY FEATURES

- America's *first* alloy steel sling chain... first to bear a serial number.
- *Every* CM HERC-ALLOY Sling Chain is alloy steel throughout... links, rings, hooks. There is only one grade... *the best.*
- Every chain is individually tested and accompanied by a certificate of registration.
- Links are side welded for maximum strength by patented INSWELL electric method.
- HERC-ALLOY Chains should *never* be annealed.
- HERC-ALLOY Chains are lighter... stronger... easier to handle... outlast ordinary chains 4 to 5 times... cost less on the job.

HERC-ALLOY... the chain you can *SEE* is safe

● A simple visual inspection* is all that is needed to determine the continued serviceability of a HERC-ALLOY Chain. That's why more and more of the important companies are standardizing on HERC-ALLOY... because HERC-ALLOY Chains are immune to unseen dangerous crystallization... because you can *see* when a HERC-ALLOY Chain needs repairs or replacing.

Write for your copy of this new, informative booklet. No charge.

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CHAIN CORPORATION
Affiliated with Chisholm-Moore Hoist Corporation
GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.
SALES OFFICES: New York • Chicago • Cleveland • San Francisco • Los Angeles

Steel Construction News

district engineer. Completion date June 30, 1951.

1000 Tons, Allentown, Pa., plant addition, Lehigh Valley Cooperative Farmers Assn., due May 22.

750 Tons, Allegheny County, Pa., Pennsylvania Turnpike Authority—western extension, Section 30e, due May 23.

650 Tons, Allegheny County, Pa., Pennsylvania Turnpike Authority—western extension, Section 30f, due May 23.

473 Tons, Shasta Co., Calif., bridge across Sacramento River near Anderson, California Div. of Highways, Sacramento, bids to May 31.

375 Tons, Walla Walla, Wash., Juniper Canyon railroad and highway bridges, Walla Walla Dist., Corps of Engineers, CIVENG-45-164-50-129, bids to June 7.

330 Tons, Newcastle County, Del., Delaware State Highway Dept., due May 24.

Reinforcing bar awards this week included the following:

1500 Tons, Chicago, 4950 Marine Drive Apts., to Olney J. Deane Co., Chicago.

1200 Tons, Allentown, Pa., filtration plant, Progressive Builders, Inc., Pennsauken, N. Y., low bidder.

850 Tons, Philadelphia, Frankfort Creek flood control, through Progressive Builders, Inc., Pennsauken, N. Y., to Bethlehem Steel Co., Bethlehem.

500 Tons, Cedar Rapids, Ia., St. Lukes Hospital, to Laclede Steel Co., St. Louis.

328 Tons, Cumberland County, Pa., Susquehanna Bridge, to Bethlehem Steel Co.

320 Tons, Pittsburgh, Pennsylvania Railroad Terminal, to U. S. Steel Supply Co., Chicago.

300 Tons, Easton, Pa., approach to bridge, Joint Toll Bridge Commission, Union Building & Construction Co., Passaic, N. J., low bidder.

220 Tons, San Luis Obispo Co., California, two bridges between Atascadero and Templeton, through M. J. B. Construction Co., Stockton, to Steelfab, Inc.

210 Tons, Omaha, public parking garage, to Ceco Steel Products Co., Chicago.

150 Tons, Cedar Rapids, Ia., stadium, to Greene and Gust Co., Chicago.

Reinforcing bar inquiries this week included the following:

770 Tons, Westmoreland and Allegheny Counties, Pennsylvania Turnpike.

655 Tons, Berkeley, Raynham and Taunton, Mass., Boston to Fall River, Mass., Expressway, bituminous concrete and bridges, F. A. Chase, Taunton, Mass., district engineer. Completion date June 30, 1951.

500 Tons, Philadelphia, Philadelphia State Hospital, female patients building, due May 27.

404 Tons, Los Angeles, overcrossings over Harbor Freeway at 3rd St., California Div. of Highways, Los Angeles, bids to June 1.

260 Tons, Turtle Creek, Pa., Union Railroad viaduct.

200 Tons, Los Angeles and Kern Cos., Calif., bridge and drainage structures near Fort Tejon, California Div. of Highways, Los Angeles, bids to June 1.

167 Tons, Berthoud, Colo., Carter Lake reservoir, Bureau of Reclamation, Denver, Spec. 3018, bids to June 1.

122 Tons, Shasta Co., Calif., bridge across Sacramento River near Anderson, California Div. of Highways, Sacramento, bids to May 31.

120 Tons, Chicago, warehouse, Michigan and 21st Corp.

110 Tons, Freeport, Ill., Deaconess Hospital.

Braun Builds Research Building

Los Angeles—A $1 million research building has recently been completed by C. F. Braun & Co., of nearby Alhambra. Equipment manufacturers for a world-wide market in the oil and chemical industries, the firm contracted for its own building.

UNITED CARR FASTENER CUTS PLATING REJECTS AND PRODUCTION TIME

with the Du Pont

SODIUM HYDRIDE DESCALING PROCESS

Courtesy: United Carr Fastener

Loading perforated dip basket with closure buttons for immersion in sodium hydride descaling bath.

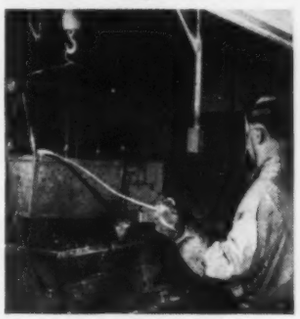
Since 1946, United Carr Fastener Corporation has used the Du Pont Sodium Hydride Descaling Bath in its Cambridge, Mass., plant for the thorough cleaning of intricately shaped steel objects prior to finishing. This efficient process which preserves base metal surfaces has enabled United Carr to maintain high dimensional accuracy on its fastener products. And plating rejects due to blistering have been eliminated!

Operator removing sodium brick to charge generator. Closure buttons in basket are ready for descaling.

Production time has been sharply cut, too. The bath has proved so efficient in removing scale from recesses and indentations not reached by other cleaning methods that parts are now cleaned in one-fourth the time formerly required. A net saving of 75% in acid cost has been realized along with a substantial reduction in spent acid disposal. In addition, subsequent polishing and burnishing operations have been reduced 50 to 75%.

Tempering of the work is now done simultaneously with descaling. The descaling equipment handles over 600 lbs. of work hourly. Accessory equipment includes a cyanide neutralizing tank to treat work which is not to be finished immediately.

United Carr Fastener's complete satisfaction with the Du Pont Sodium Hydride Descaling Process can be duplicated over and over again by many other plants. Why not investigate its possibilities for your own operations? Send the coupon below for your copy of the booklet "Du Pont Sodium Hydride Descaling Process." It describes the process and tells how it can mean important savings in metal, time, space, and materials in your plant.



Closure buttons are released into quench tank through hinged bottom of basket.

Tune in Du Pont "Cavalcade of America" Tuesday nights—NBC coast to coast

DU PONT
Sodium hydride process for positive descaling

DU PONT

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

E. I. du Pont de Nemours & Co (Inc.)
Electrochemicals Department
Wilmington 98, Delaware

Please send my copy of "Du Pont Sodium Hydride Descaling Process."

*Name*_____

*Firm*_____

*Position*_____

*Address*_____

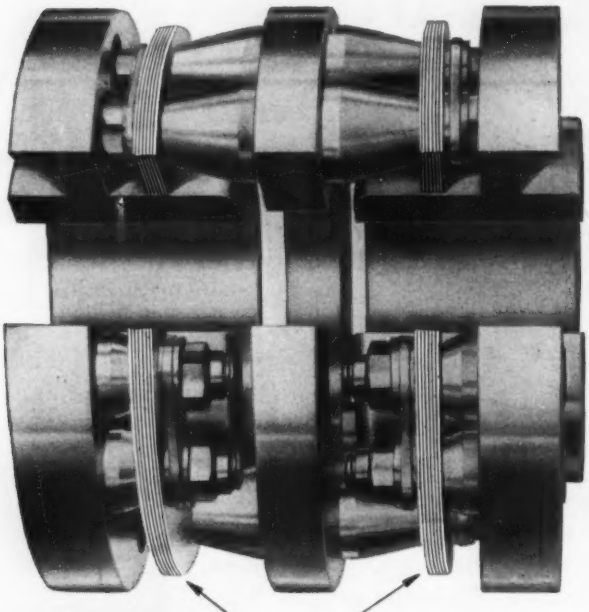
THOMAS *Flexible* ALL METAL COUPLINGS

FOR POWER TRANSMISSION • REQUIRE NO MAINTENANCE

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

Thomas Couplings have a wide range of speeds, horsepower and shaft sizes: ½ to 40,000 HP — 1 to 30,000 RPM.

Specialists on Couplings for more than 30 years



PATENTED FLEXIBLE DISC RINGS

BACKLASH FRICTION WEAR and CROSS-PULL are eliminated LUBRICATION IS NOT REQUIRED!

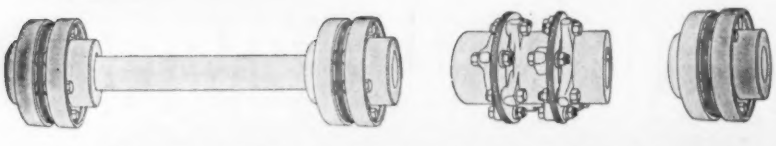
THE THOMAS PRINCIPLE GUARANTEES PERFECT BALANCE UNDER ALL CONDITIONS OF MISALIGNMENT.

• • •

NO MAINTENANCE PROBLEMS.

• • •

ALL PARTS ARE SOLIDLY BOLTED TOGETHER.

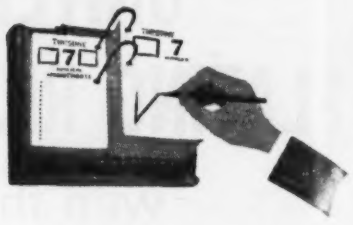


Write for the latest reprint of our Engineering Catalog.

THOMAS FLEXIBLE COUPLING CO.

WARREN, PENNSYLVANIA

Dates to Remember



May 8-12—American Foundrymen's Society, annual convention and exhibition, Public Auditorium, Cleveland. Society headquarters are at 222 W. Adams St., Chicago.

May 10-12—Machinery Dealers' National Assn., annual convention, Hotel Statler, Detroit. Association headquarters are at 20 N. Wacker Drive, Chicago.

May 15-17—Industrial Furnace Manufacturers Assn., annual meeting, The Homestead, Hot Springs, Va. Association headquarters are at 420 Lexington Ave., New York.

May 22-24—American Supply & Machinery Manufacturers' Assn., Industrial supply convention, Convention Hall, Atlantic City, N. J. Association headquarters are at 1108 Clark Bldg., Pittsburgh.

May 24-25—American Iron & Steel Institute, annual meeting, Waldorf-Astoria Hotel, New York. Institute headquarters are at 350 Fifth Ave., New York.

May 25-27 — Society for Experimental Stress Analysis, spring meeting, Hotel Statler, Cleveland. Society post office address is Box 168, Cambridge, Mass.

May 26-27—Society for Applied Spectroscopy, annual meeting, Socony-Vacuum Training Center, New York. Society secretary is Ruth Abbott, American Cyanamid Co., Bound Brook, N. J.

May 27-30—Gas Appliance Manufacturers Assn., annual meeting, Greenbrier, White Sulphur Springs, W. Va. Association headquarters are at 60 E. 42nd St., New York.

June 1-2—American Society for Quality Control, national convention and midwest conference, Milwaukee Auditorium, Milwaukee. Society headquarters are at 4949 W. 65th St., Chicago.

June 4-7 — National Industrial Service Assn., Inc., annual convention, Hotel Statler, Boston. Association headquarters are at 818 Olive St., St. Louis.

June 4-9—Society of Automotive Engineers, summer meeting, French Lick Springs Hotel, French Lick, Ind. Society headquarters are at 29 W. 39th St., New York.

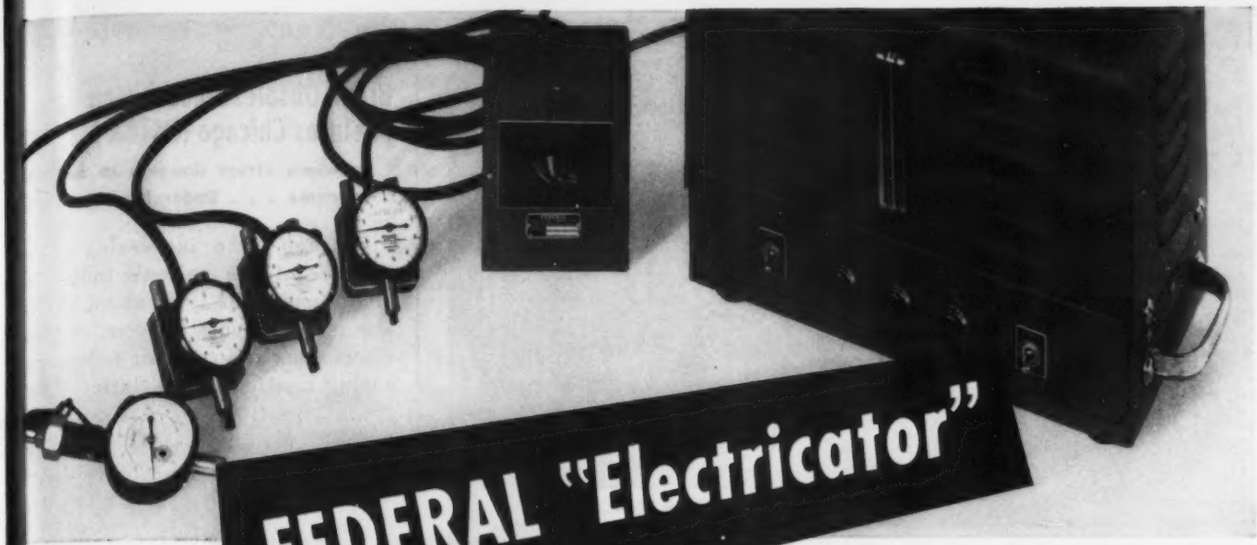
June 5-7—American Gear Manufacturers Assn., annual meeting, The Homestead, Hot Springs, Va. Association headquarters are in the Empire Bldg., Pittsburgh.

June 8-10—National Society of Professional Engineers, annual meeting, Hotel Statler, Boston. Society headquarters are at National Press Bldg., Washington.

June 12-16—American Electroplaters' Society in collaboration with the Electrodepositors' Technical Society of England, international electrodeposition conference, Statler Hotel, Boston. Society headquarters are at 473 York Road, Jenkintown, Pa.

June 19-23—American Society of Mechanical Engineers, semiannual meeting, Hotel Statler, St. Louis. Society headquarters are at 29 W. 39th St., New York.

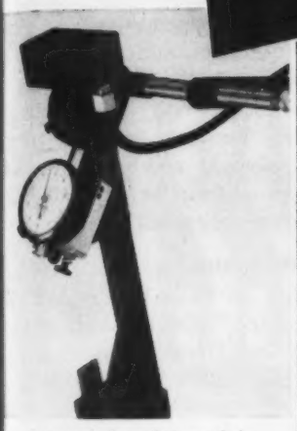
Oct. 23-27—National Metal Congress & Exposition, International Amphitheater, Chicago. American Society for Metals headquarters are at 7301 Euclid Ave., Cleveland.



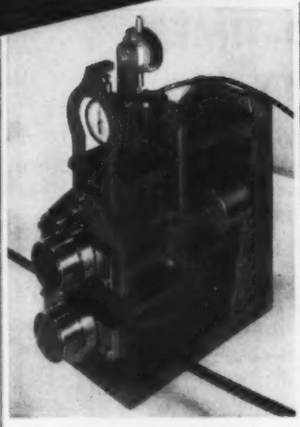
FEDERAL "Electricator"

A Signal and Automatic Dimensional Control Indicator

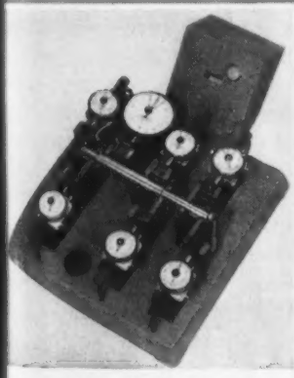
FOR: ***Machine Size Control***
Continuous Control
Multi-dimension Gaging
Automatic Gaging



Stops grinder when work is ground to size



Controls amount of insulation deposited on wire



Signal tells if any diameter is offsize

Automatically selects pieces of correct thickness

IT'S VERSATILE. Federal "Electricator" combines the tried and proven features of the Dial Indicator with an electrical power circuit. You can use the "Electricator" for high-speed precision gaging — for precision machine contol — for automatic sorting of parts — for controlling processes. In fact, there's practically no limit to the gaging versatility of the "Electricator" . . . or to its ability to reduce waste and cut costs.

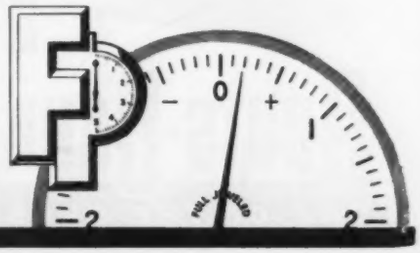
IT'S COMPACT. The "Electricator" fits into the same space as a Dial Indicator. A multiple dimension "Electricator" gage not only shows the size condition on the Dials . . . it reveals faulty workpieces instantly by flashing a *single* control signal. You can't beat it!

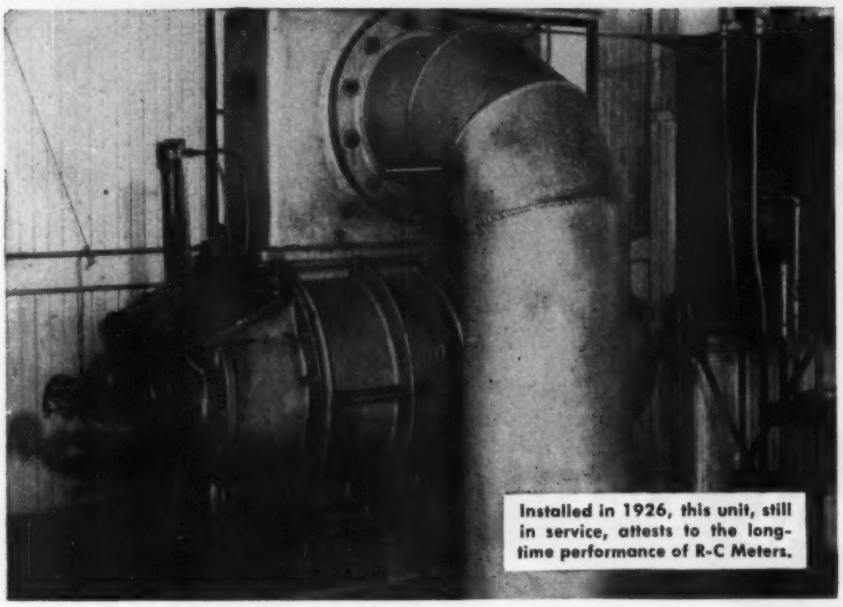
IT'S A PRODUCTION TOOL. For controlling plunge-cut grinding, for continuous process control, for automatic high-speed sorting, the "Electricator" pays off in greater precision and increased inspection output. Take the automatic grinding gage, for example. You get up to twice as many parts per hour from your machines and *no waste* — these parts are 100% O.K. within a tenth (.0001").

You can get profit-making, cost-cutting help with the Federal "Electricator". Write for more information. Federal Products Corporation, 1135 Eddy Street, Providence 1, Rhode Island.

FEDERAL

Largest manufacturer devoted exclusively to designing and manufacturing *all types* of DIMENSIONAL INDICATING GAGES




Installed in 1926, this unit, still in service, attests to the long-time performance of R-C Meters.

NO PENSION FOR THIS OLD-TIMER even after *23* years of service

Accurate and dependable as always, this 23-year-old Roots-Connersville Meter still performs faithfully. No retirement for this veteran! Because new demands called for higher capacity, it has been transferred to another job in the same plant. Its old duties have been taken on by a new R-C unit, purchased because of fine performance of this old-timer.

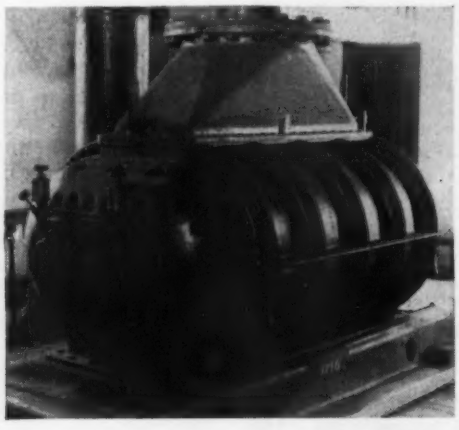
That's a common history of R-C Meters. They're built to measure accurately, and keep on doing it, year after year. Simple design, finely machined measuring surfaces and other important refinements account for their ability to measure gas accurately and unfailingly, almost indefinitely.

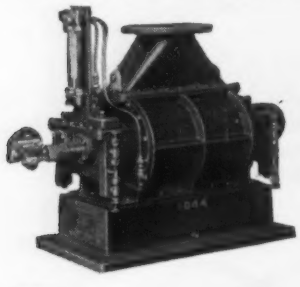
With 31 standard sizes and capacities from 4,000 to 1,000,000 cfh, R-C Meters meet the needs of most applications. Write for Bulletin 40-B-14 or tell us your specific requirements.

ROOTS-CONNERSVILLE BLOWER CORPORATION
505 Ohio Avenue, Connersville, Indiana

(Right) This R-C Meter, with capacity of 317,000 cfh, replaced the "old-timer" above, now transferred to other duties.

(Below) Typical small capacity R-C Meter for low and medium pressures.





ROOTS-CONNERSVILLE
BLOWER BUILDERS SINCE 1854
ONE OF THE DRESSER INDUSTRIES

Plant Obsolescence Theme Features Chicago NMTBA Meeting

Speakers stress dangers to national economy . . . Understanding urged.

Chicago—The increasing obsolescence of the nation's industrial plants and what to do about it was the major theme of open session discussions and corridor talk at the spring meeting of the National Machine Tool Builder's Assn. in Chicago, May 4 and 5.

The dominant thoughts of the meeting were that a healthy expanding national economy requires an increase in the present rate of replacing obsolete machinery, and that the machine tool industry must foster understanding of this fact by Congress and the public.

Speakers emphasized the danger of obsolescence to the national economy. Reasons for the trend were analyzed, and steps which have been and can be taken to combat it were discussed.

Sales Weapons

Talking on "The Battle Against Obsolescence," David Ayr, president of the Hendey Machine Co. and of the NMTBA, discussed machine tool replacement arithmetic.

Swan E. Bergstrom, vice president of Cincinnati Milling & Grinding Machines, Inc., reported on the NMTBA sales training courses and the selling tools being given to salesmen, one of which is an advertising council to work with the sales and service committee to promote the replacement buying theme.

Promotion of proper replacement policies was the subject of L. W. Scott Alter, president, the American Tool Works Co., and Everett M. Hicks of the Norton Co.

Activities of the NMTBA government relations committee were reported on by L. D. McDonald, vice president of the Warner & Swasey Co.

Ralph J. Kraut, president, Giddings & Lewis Machine Tool Co., discussed European conditions. Delivering the banquet address, W. Walter Williams, chairman of the Committee for Economic Development, discussed tools of economic development.

Disston Hot Rolled Shape 11.16 lbs. per ft.

This 3.35 lbs. per ft. is out

- **You don't buy it**
- **You don't machine it**

You can see where the use of Disston Special Hot Rolled Shapes saves production costs and material. These basic savings are stepped up by Disston ability to give you uniform accuracy in all dimensions and remarkably clean finish.

Do you run into difficulty on any hot rolled shapes you use now? Disston skill and facilities will come to your rescue.

What new special shapes will be practical for you? Disston will work them out to save you time and money right from the start.

You can effect distinct economies with special shapes in electric, open hearth and Bessemer grades, hot rolled by Disston.

A few of the many Disston Special Hot Rolled Shapes are shown below, full size.

DISSTON HOT ROLLED SHAPES

HENRY DISSTON & SONS, INC., 519 Tacony, Philadelphia 35, Pa., U. S. A.

WHEN YOU BUY A DISSTON PRODUCT YOU BUY DISSTON STEEL SKILL and SERVICE

Reg. U.S. Pat. Off

IF IT CALLS FOR *Better Tubing..*

BETTER CALL FOR **BRAINARD**

WELDED MECHANICAL TUBING

It's easy to understand why more Brainard Tubing is being used today than ever before.

For tube users everywhere are discovering they can get quality tubing at standard prices just by specifying "Brainard."

The reason—Brainard forms their tubing from their own strip—thus they can build better value into their product.

Brainard also performs many fabricating operations. Brainard offices are listed below. Call the one nearest you, the next time you want tubing or fabricated tube parts.

TUBING DIVISION

BRAINARD STEEL COMPANY

2305 LARCHMONT AVENUE WARREN, OHIO

There are Brainard sales offices in Atlanta, New York, Cincinnati, Pittsburgh, Buffalo, Chicago, Philadelphia, Detroit, Cleveland and Nashua, N. H. Sales Representatives: Sharonsteel Products Co. in Detroit and Grand Rapids, Mich.; B. W. Parsons Co., St. Paul, Minn.; Fred J. Reynolds, Davenport, Ia.

ASME Speaker Confident For Approval of Ohio Belt Bill

Pittsburgh—A bill proposing a belt conveyer system to transport iron ore, coal, and limestone between East Liverpool, Ohio, and Youngstown, defeated in the final '50 session of the Ohio Legislature, will be passed in 1951, assured Noel R. Michell, secretary of the Riverlake Belt Conveyor Lines, Inc.

He spoke recently before the national conference of the American Society of Mechanical Engineers and said that railroads' objections aided the bill's previous defeat.

Financed Privately

Michell foresaw a potential tonnage of 30 million tons of iron ore, 29 million tons of coal and 3 million tons of limestone moving over the proposed 130-mile belt system. He contended the conveyer could not carry more than 4.6 pct of the gross tonnage of Ohio railroads, or take 2.5 pct of their revenue.

Cost of the line is estimated at $210 million, to be amortized over 20 years. It would be privately financed, Michell said.

Navy Orders Airplanes

Los Angeles—Aircraft plants in this area have secured Navy orders totaling $78 million recently.

A government announcement indicated the type planes ordered but not the exact number of each.

North American Aviation has been granted a $12,844,982 order for AJ attack planes, anti-submarine craft with two piston engines and a jet engine in the tail.

Douglas gained a large chunk with a $30,036,362 order for two-engine jet fighters of the F3D Skynight type and $8,724,360 of the Ad Skyraiders, a propeller-driven attack plane.

The third major contract went to Lockheed Aircraft with $25,427,942, allotted for P2V Neptunes, long-range anti-submarine aircraft, and $1,188,000 for Shooting Star jets, a two-place trainer.

NOW Line-O-Power

STRAIGHT LINE DRIVES

DOUBLE REDUCTION

high quality
economy
efficiency

TRIPLE REDUCTION

CHECK THESE Line-O-Power features

✓ **ECONOMICAL TO BUY**—Lower original cost because these units are designed for manufacture on latest and most accurate high production machine tools.

✓ **ECONOMICAL TO OPERATE**—Straightforward, enclosed offset shaft principle of design gives efficiencies of 96% or higher. Simplified construction—minimum number of moving parts—direct splash lubrication—quality workmanship hold maintenance to a minimum.

✓ **DUTI-RATED HELICAL GEARS**—Duti-Rated high hardness helical gears manufactured to rigid standards assure exceptional accuracy, long life and dependability.

✓ **MODERN APPEARANCE**—The last word in clean-looking, modern design. The streamlined Line-O-Power unit on original equipment highlights the designer's approach to functional, efficient equipment.

✓ **COMPACT — SAVES SPACE** — Compact because the entire housing volume has been utilized to attain speed reduction. Placement of input and output shafts in a direct line brings the coupled motor and speed reducer into a narrow line of power transmission.

✓ **LARGE OVERHUNG LOAD CAPACITY**—Conservatively selected, large capacity antifriction bearings and husky output shafts assure maximum overhung load capacity.

✓ **STURDY HOUSINGS**—The housings of Line-O-Power Drives are rugged, dense, sturdy castings to give maximum rigidity and minimum deflection under load.

✓ **LARGE RANGE OF SIZES AND RATIOS**—A large range of double and triple reductions for capacities from 1 to 200 horsepower. Ratios from 5 to 1 up to 238 to 1 available for prompt delivery.

✓ **APPLICATION ADAPTABILITY**—Line-O-Power drives will transmit power from any prime mover and are adaptable for horizontal side-wall or ceiling mounting upon order.

Here is a newly developed drive that offers high quality combined with economy both in original cost and in operation.

Line-O-Power Units use Foote Bros. Duti-Rated high hardness helical gears for long life, quiet operation and compactness.

Line-O-Power Drives are the last word in modern symmetrical design. Wherever enclosed gear drives are used, they assure a clean-cut, efficient power package unit.

FOOTE BROS. GEAR AND MACHINE CORPORATION
Dept. M, 4545 S. Western Boulevard Chicago 9, Illinois

FOOTE BROS.

Better Power Transmission Through Better Gears

Foote Bros.-Louis Allis Gearmotors

Maxi-Power Helical Gear Drives

Hygrade Worm Gear Drives

WRITE FOR BULLETIN LPA
Foote Bros. Gear and Machine Corporation
Dept. M, 4545 S. Western Blvd.
Chicago 9, Illinois

Please send me a copy of Bulletin LPA on Foote Bros. Line-O-Power Drives.

Name.....
Company.....
Position.....
Address.....
City..... *State*.....

Looking for ways to cut costs?

Illustrated is the popular Wells No. 8 Saw with wet cutting system.

use a WELLS METAL CUTTING BAND SAW!

In thousands of plants all over the world, Wells Saws are proving that it is possible to cut metal faster and more accurately at lower cost. This is accomplished through machine design and the principle of *continuous cutting*. As each tooth does its share of the work, the blade is cutting all the time — there is no lost motion. This means more cuts per day and lower unit cost to you.

Three standard models of Wells Metal Cutting Saws are available to meet virtually every need. Use the handy chart below to find the saw you need to meet your requirements and ask your Wells dealer for complete information or write direct.

DESIGN DETAILS

Saw No.	No. 5	No. 8	No. 12
Principle Use	General Utility	Utility and Production	Heavy Duty Service
Capacity, Rectangular	5" x 10"	8" x 16"	12" x 16"
Capacity, Rounds	5" dia.	8" dia.	12¾" dia.
Speeds, Selective	60, 90, 130 ft./min.	60, 90, 130 ft./min.	50, 90, 150 ft./min.
Power	⅓ H.P.	½ H.P.	⅓ H.P. & ¾ H.P.
Weight, Approx.	425 lbs.	665 lbs.	1750 lbs.

Wells Saws

Wells

Products by Wells are Practical

METAL CUTTING BAND SAWS

WELLS MANUFACTURING CORPORATION
202 WASHINGTON AVE., THREE RIVERS, MICH.

Machine Shop Survey Shows Lack of Work, Idle Equipment

New York—Additional work is needed by the 86.3 pct of New York City's machine shops which report idle equipment. That, and the fact that 60.3 pct are operating at half capacity or less, was disclosed on May 2 by the Commerce and Industry Assn. of New York, Inc.

Other important findings of their survey, covering 233 firms, were:

(1) Business decreases from 5 pct to 95 pct were reported by 48 pct of the shops for the first 3 months this year compared to the first quarter of 1949; 29.3 pct indicated no change, while only 22.7 pct showed increases.

(2) More than one shift are being run by 3.8 pct and 15.4 pct are operating at full capacity.

(3) Employment is down 13.5 pct from last year's 4708 total, but 80.7 pct of the shops do not anticipate any but seasonal change in the next 3 months.

(4) The Government's Defense Program resulted in additional work for only 27.0 pct of the shops and this consisted mainly of small orders at low profits.

(5) Lower wage rates and costs in other sections caused a drop in business for 32.5 pct.

(6) Only 3.9 pct of the firms are having difficulty in getting materials.

Questionnaires were sent to all known machine shops in the city.

March Employment Holds Steady

Albany—Employment gains in most durable goods industries, excepting lumber, and in most nondurable goods offset a seasonal loss in the apparel field to keep March employment on a plane with February in New York State, reports Industrial Commissioner Edward Corsi. Employment was estimated at 1,773,900.

Primary and fabricated metals industries, radio and television plants, shipbuilders, railroad equipment and auto producers all reported employment gains.

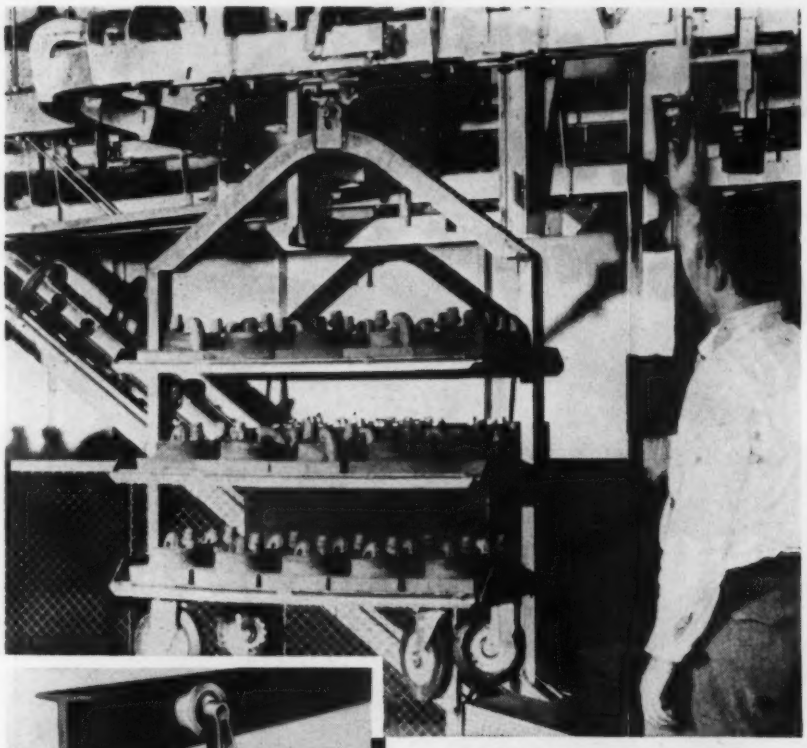
an $8,000,000 expansion program for the production of ST. JOE electrothermic ZINC

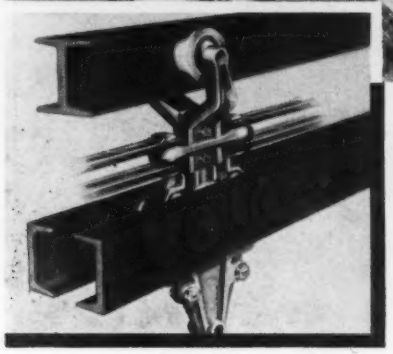
The St. Joseph Lead Company's electrothermic smelter at Josephtown, Pa.

The plant operates as a custom smelter, receiving both domestic and foreign concentrates. Constructed in 1930, it was designed to process 3,600 tons per month of zinc concentrate obtained mainly from the Company's zinc mines in St. Lawrence County, N. Y. Expansion of the plant and equipment during 1939 and 1940 brought the processing capacity to about 9,000 tons of concentrate per month. As a result of a postwar expansion program completed in 1950, at a cost of about $8 million, the smelter's processing capacity has increased to 16,000 tons. The following grades of electrothermic zinc are produced: **HIGH GRADE • INTERMEDIATE • BRASS SPECIAL • PRIME WESTERN**

ST. JOSEPH LEAD COMPANY

250 PARK AVENUE, NEW YORK 17, NEW YORK, ELdorado 5-3200





FLEXIBILITY PLUS SAVINGS with POWER and FREE CONVEYOR SYSTEMS

At Alcoa's Bridgeport plant, seven integrated Webb power-and-free conveyors provide amazing flexibility needed for their operations. These requirements are basically the same as in any jobbing foundry having mixed long and short runs of castings ranging from ounces to several hundred pounds.

Webb engineers solved this complicated problem with the installation of more than a mile and a half of power-and-free conveyors comprised of seven chain-driven power sections, 31 free loops and 20 free sidings. This materials handling equipment has set a new high in efficiency, savings and safety.

The facts about this remarkable job are told in a folder "The story of a mechanized Foundry." It is well worth reading. Your copy will be mailed on request.

JERVIS B. WEBB COMPANY

OFFICES IN PRINCIPAL CITIES
8917 ALPINE AVE.
DETROIT 4, MICH.

MANUFACTURERS OF OVERHEAD AND FLOOR TYPE CONVEYORS

FREE

PUBLICATIONS

Continued from Page 34

on production machines. The various styles of printing counters shown provide both visual and recorded count. *Durant Mfg. Co. For your free copy, check No. 8 on postcard, p. 35.*

Form Grinding

The J & S form-grinding service for special high speed steel and carbide tools to individual specifications with precise accuracy, is described in a 4-p. illustrated folder showing a number of spiral form tools. *J & S. Tool Co., Inc. For your free copy, check No. 9 on postcard, p. 35.*

Variable Frequencies

A Katolight machine which can be arranged to provide as many as six different frequencies in sources of current supply for production and experimental testing setups is described in a new circular. *Kato Engineering Co. For your free copy, check No. 10 on postcard, p. 35.*

Bending Presses

Beatty hydraulic horizontal pipe benders and bulldozers for bending, straightening, forming and pressing, ranging in capacities from 35 to 400 tons, are described in a new 8-p. folder. *Beatty Machine & Mfg. Co. For your free copy, check No. 11 on postcard, p. 35.*

Protective Coatings

NO-OX-ID oil type rust preventives, designed specifically for applications where a coating with lubricating properties is a primary consideration, are described in a series of new data sheets. *Dearborn Chemical Co. For your free copy, check No. 12 on postcard, p. 35.*

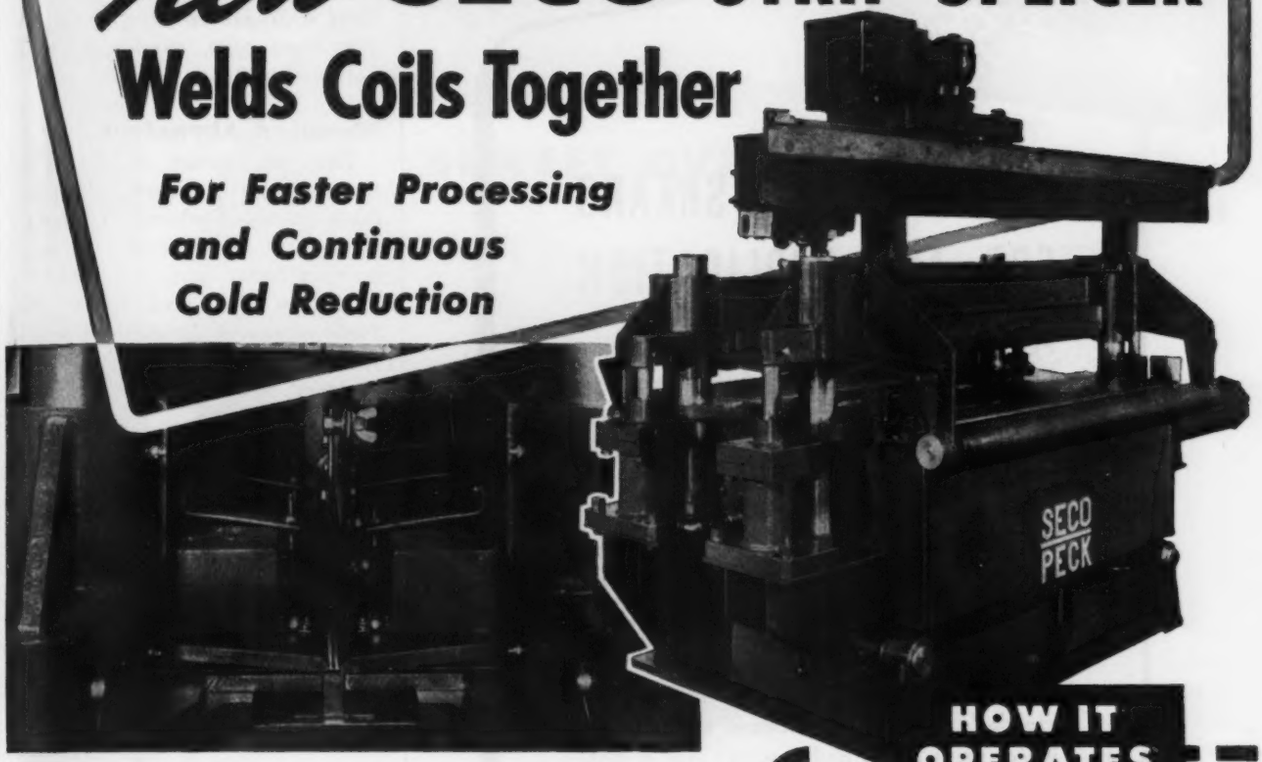
Selector Switch

Engineering data and typical applications for the Arrow-Hart push-pull selector switch motor control are detailed in a new 8-p. folder explaining how the PPS provides a

New SECO STRIP SPLICER

Welds Coils Together

For Faster Processing and Continuous Cold Reduction



New Semi-Automatic Machine Speeds Up Processing Lines

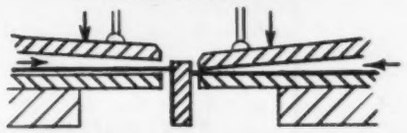
You can save time and effort in handling strip steel with the new SECO Strip Splicer—designed to form a continuous welded strand for faster processing. More efficient than mechanical stitching or spot welding, the SECO Splicer uses submerged melt arc welding—permitting *continuous* cold reduction.

Operation is semi-automatic. Strip is welded quickly and efficiently with no waste time. A stop gauge and air-operated side guides accurately position the coil ends —which are automatically welded together. Various material thicknesses and widths are accommodated by adjustable automatic controls.

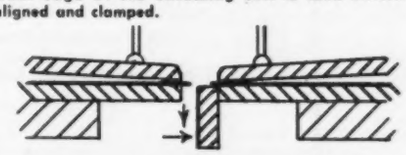
The SECO Strip Splicer shown has a working width of 56", handling strip from .060" to .183" thick. The design can easily be adapted for your requirements. Write today for full information.

HOW IT OPERATES

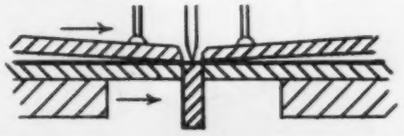
Direction of Travel →



1. The tail end of the outrunning coil is brought squarely against the stop gauge and clamped firmly against a copper bar on the platen by a copper clamping bar. The front edge of the oncoming coil is then similarly aligned and clamped.



2. The stop gauge retracts and moves forward ½ inch, squarely under the tail end of the outrunning coil. It now acts as a welding anvil or "fire strip" to back up the weld.



3. The complete entry platen moves forward one inch, bringing both coil ends exactly together over the center line of the fire strip. The sheared ends of both coils are now accurately positioned—ready to be welded.

4. The operator presses one push-button, which automatically starts the weld, permits the electrode to make contact, opens the flux valves and starts the welding head carriage travel. Adjustable limit switches start and stop the weld according to strip width. At completion, the welding head returns to starting position and both clamping bars are immediately raised six inches, allowing the strip to travel at normal line speed. Surplus granulated flux is removed by a flux reconditioning unit.

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Hallden Automatic Flattening and Cutting Off Machines can be built into lines requiring special shearing applications.

Hallden Automatic Shears are designed to permit continuous feed of metal through the machine by synchronizing the flattener with the flying shear. Cutting accuracy can be held to plus or minus 1/64".

Hallden Shears are self-contained units which, under normal operation, require little maintenance other than lubrication.

Hallden's flexible design allows quick changing of shear knives and easy removal of flattening rolls for grinding. The shear knives always move in a mutual plane.

If you have a shearing problem, consult Hallden, *the shearing specialists.*

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THOMASTON, CONNECTICUT

Sales Representatives
The Wean Engineering Co., Inc., Warren, O.
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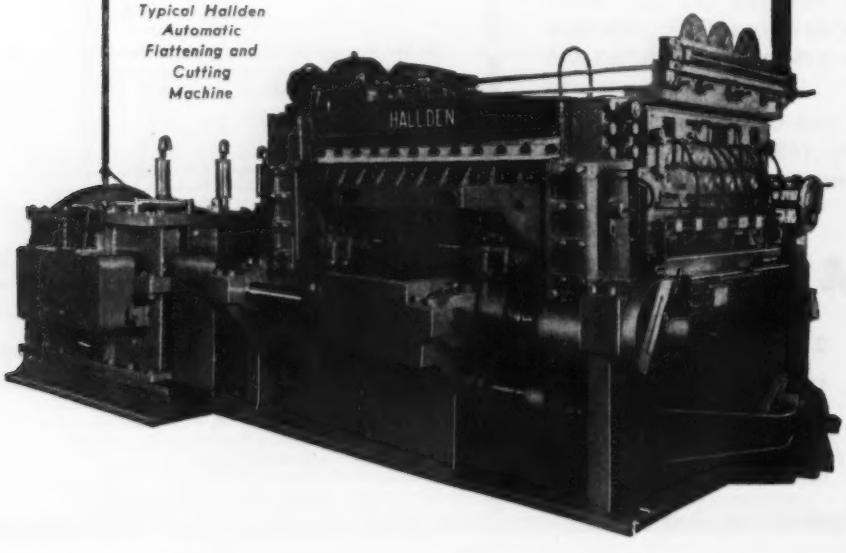
W. H. A. Robertson & Co., Ltd., Bedford, England

Typical Hallden Automatic Flattening and Cutting Machine



FREE PUBLICATIONS

Continued

single master control that will serve 8 to 16 operations. *Arrow-Hart & Hegeman Electric Co. For your free copy, check No.* 13 *on postcard, p.* 35.

Mounted Abrasives

The vast range of sizes and shapes in the standard line of Bay State mounted wheels and points, manufactured in different bonds for particular jobs, are described in a new illustrated folder. *Bay State Abrasive Products Co. For your free copy, check No.* 14 *on postcard, p.* 35.

Lift Trucks

Engineering sketches in a new 8-p. bulletin present in detail the advanced features of the new Barrett MD hydraulic lift truck, developed to permit easier and more economical handling of loads up to two tons and more by one man. *Barrett-Cravens Co. For your free copy, check No.* 15 *on postcard, p.* 35.

Cable Connectors

Descriptive Sheet 906 shows the new EC&M Solderless Cable Connectors for use with lifting magnets and other power circuits where ease of detachment from and quick reconnection to the power unit is required. *Electric Controller & Mfg. Co. For your free copy, check No.* 16 *on postcard, p.* 35.

Saw Tables

Specifications and features of the Crescent tilting table type, production saw units designed for capacity, safety and economy are presented in the new 4-p. Bulletin No. 5. *Power Tool Div., Rockwell Mfg. Co. For your free copy, check No.* 17 *on postcard, p.* 35.

Duplicating Machines

The line of Di - Acro shears, notchers, punches, brakes, parters and benders, for precision die-less production duplicating are described in an 8-p. catalog showing examples of work performed and listing prices. *O'Neil-Irwin Mfg. Co. For your free copy, check No.* 18 *on postcard, p.* 35.

Resume Your Reading on Page 35

No, it's the magnified "horizon" of a series of Nicholson file teeth as viewed through an *optical comparator* (a "seeing eye" instrument that profiles objects and enlarges many of them up to 125 times). Note that the teeth are all uniformly high, uniformly spaced—ready to share the work evenly. The added checkups afforded by this scientific watchdog help greatly in keeping the file-cutting machines in perfect adjustment—thus preventing the uneven spacing that usually results in high and low teeth like this:

And what good are low file teeth if they can't reach the work? None at all. What's more, shirking their duty puts an extra strain and wear on the reduced number of high teeth. The results in poor file work, shortened file life and excessive file costs are obvious.

Uniform cut—as precise as human skill and well-designed, efficiently maintained file-cutting machinery can achieve—is one of many features of Nicholson files that spell QUALITY in the highest sense. They have enabled the world's foremost file manufacturer to guarantee *Twelve perfect files in every dozen.*

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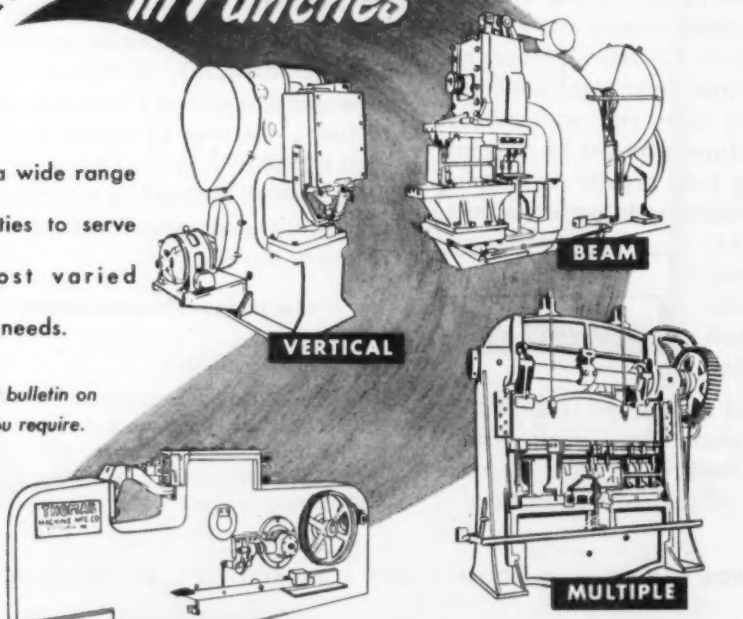

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MACHINE MANUFACTURING COMPANY
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24

PUNCHES • SHEARS • PRESSES • BENDERS • SPACING TABLES

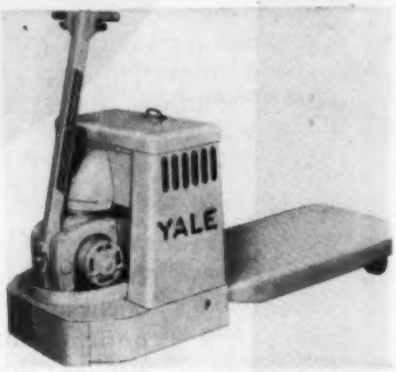
NEW PRODUCTION IDEAS

Continued from Page 38

directly onto the inspection table, as there is no cooling period involved. *Induction Heating Corp. For more data check No.* 32 *on postcard, p.* 35.

Shorter Worksaver Truck

A 6-in. saving has been effected between the battery box and front edge of a new Stubby Worksaver, retaining full platform lengths for handling skids and skid bins. Development of the shorter Worksaver makes this type truck more adaptable for handling skids and

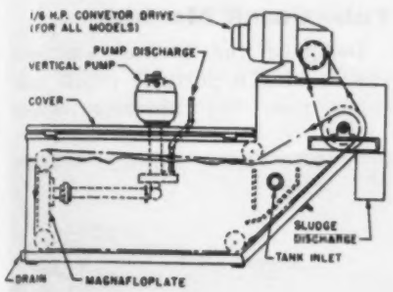


skid bins in confined areas. The truck is available in 4000 and 6000 lb capacities. Standard platform lengths range from 36 to 72 in. in 6-in. increments. Heights of 6, 7, 9, 10, and 11 in. are available for handling skids of different heights. Platform widths are 19, 24 and 26 in. Lifting is by hydraulic mechanisms. *Yale & Towne Mfg. Co. For more data check No.* 33 *on postcard, p.* 35.

Magnetic Separator

Fully automatic removal of ferrous solids from cutting oils and water soluble coolants is claimed for a complete package unit described as the Magnaflo Separator. The unit is said to remove 75 to 90 pct of solids in a relatively dry sludge for easy disposal. Two Magnaflo units serve individual machine tools with 20 to 40 gpm flow rate requirements. Three larger sizes are for grinders with total

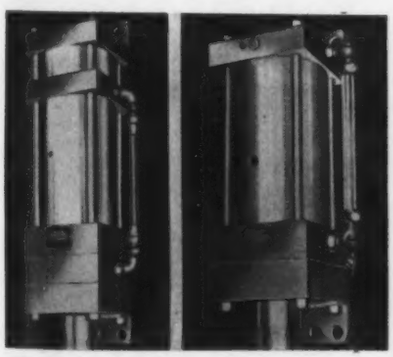
flow rate requirements ranging from 60 to 100 gpm. In operation, the Magnaflo provides a 3½ to 5 min detention period for larger solids to settle out of dirty coolant to the tank bottom. Coolant must then pass through a Magnafloplate having fully immersed per-



manent magnets that attract and hold ferrous material to the face of the plate. A motor-driven drag-link conveyer equipped with non-magnetic flights continuously scrapes down the solids from the plate. *U. S. Hoffman Machinery Corp. For more data check No.* 34 *on postcard, p.* 35.

Pressure Boosters

Production line fluid pressure boosters develop working hydraulic output pressures up to 10,000 psi from ordinary plant air or hydraulic input pressures. Booster units are recommended for supplying the fluid power for driving working cylinders in clamping,



punching, shearing, crimping, riveting, welding and pressing. The booster need not be mounted on the equipment itself and an indefinite number of working cylinders can operate from one booster. In booster operation, input pressure may be either air or hydraulic; output is

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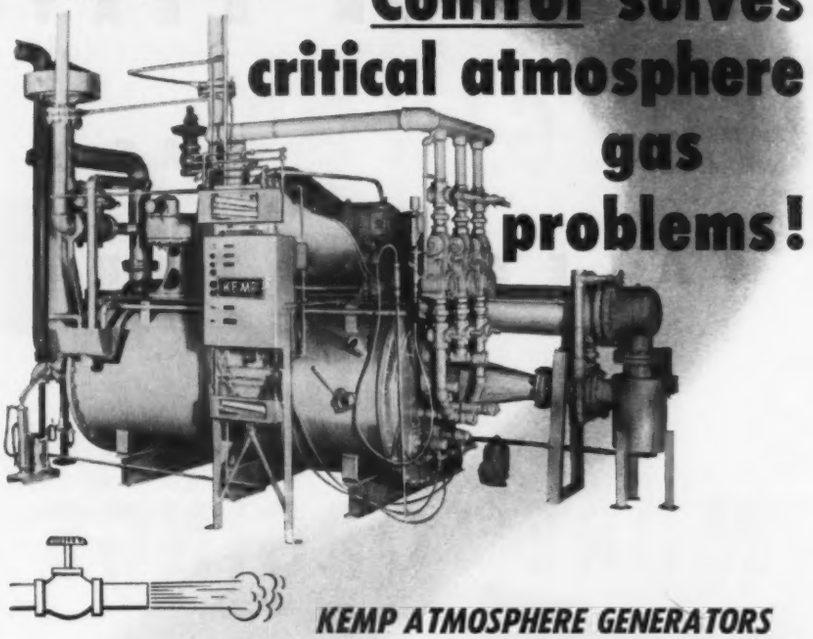

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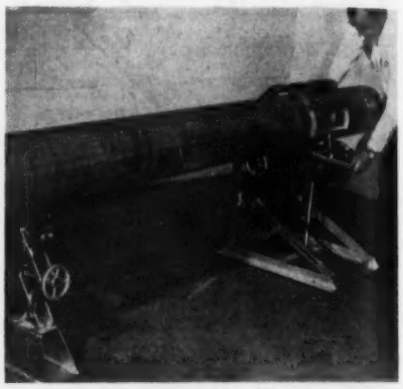
always hydraulic. Operating speeds range from 30 to 450 strokes per min. *Miller Motor Co. For more data check No.* 35 *on postcard, p.* 35.

Tube Cutoff Machine

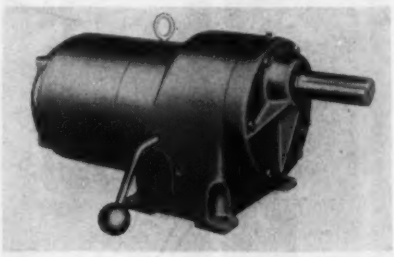
Designed for cutting stainless steel tubing a portable cutoff machine uses the abrasive wheel



method. The machine simply "walks around" any tube from 4 to 24 in. diam and is said to cut off the tube to an accuracy within 0.010 in. *Gilman Engineering & Mfg. Corp. For more data check No.* 36 *on postcard, p.* 35.

Gearshift Drives

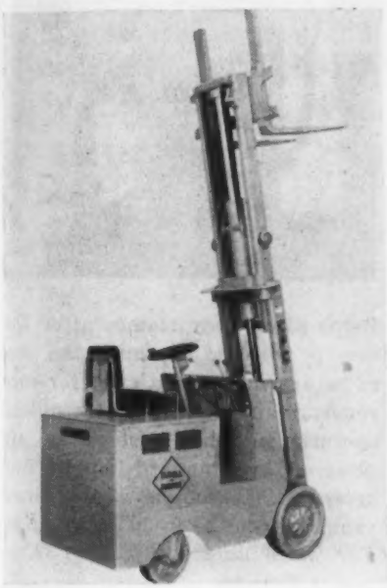
The new Lima drive features a combination integrally mounted electric motor and a four-speed transmission having both primary and secondary gear reductions. The



drives deliver full rated horsepower in each of the four speeds and both constant-torque and constant horsepower two-speed motors are available on these units. They are designed for operation on polyphase, ac, power supplies of standard frequencies and voltages below 600. *Lima Electric Motor Co. For more data check No.* 37 *on postcard, p.* 35.

Fast Action Fork Truck

Fast action in handling 4000-lb loads features a new medium-weight electric power fork truck. In tiering operations the truck lifts to a base height of 130 in. in 26 sec. With light load, the fork attains the full 130-in. height in 15 sec, and lowers a capacity load in 16 sec. Travel speed on straight-away with full load is 5½ mph. A telescoping single-cylinder, low-pressure, double-action hydraulic system in the center of the telescoping uprights contributes to the fast action. The upright column is hydraulically tilted 5° forward



from vertical in 2 sec; 12° backward from vertical in 4 sec. Overall length of the truck with 36-in. fork is 116 in.; width, 41 in.; height with uprights telescoped, 83 in. Turning radius is 74 in. in intersecting aisles; 134 in. in right-angle aisles. *Elwell-Parker Electric Co. For more data check No. 38 on postcard, p. 35.*

Core Drawing Machine

Performing one complete core-draw cycle in 18 sec, a new core drawing machine operates with any type core blower and can be used singly, in pairs for double shuttle operations, and in circular conveyer systems handling high production. The core box is posi-

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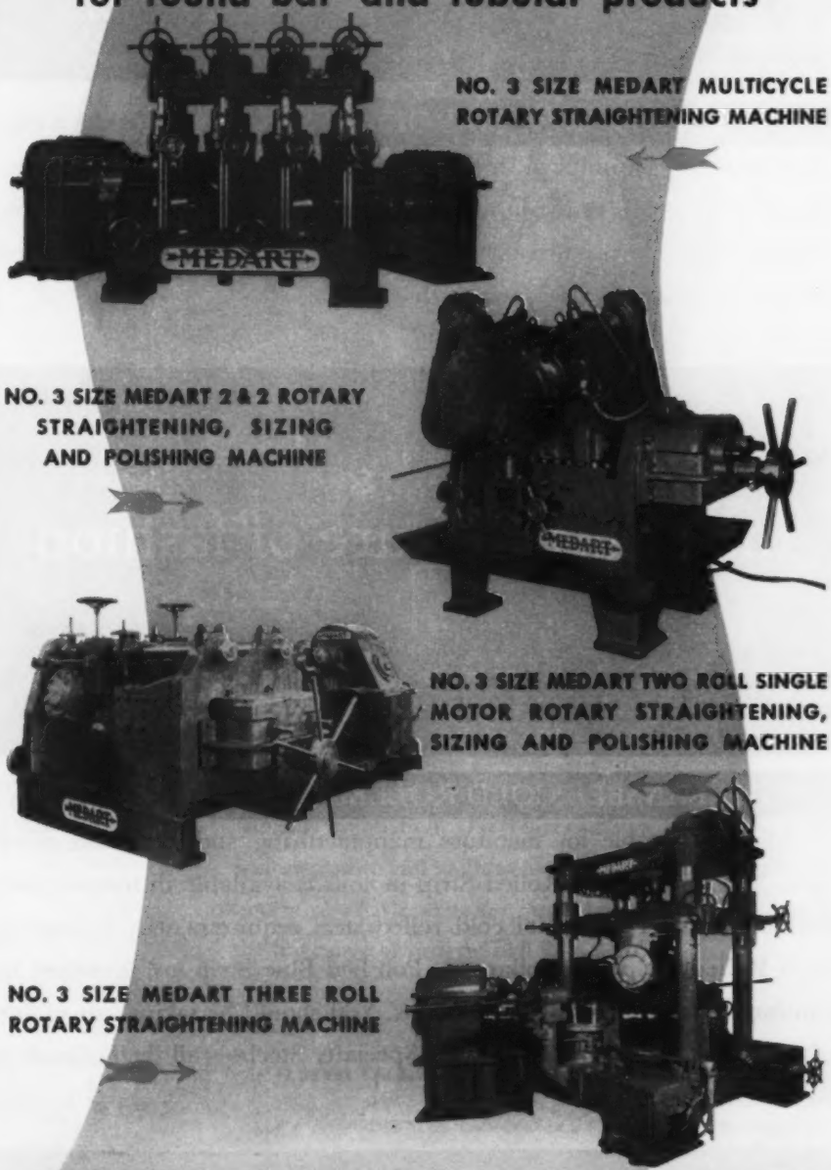
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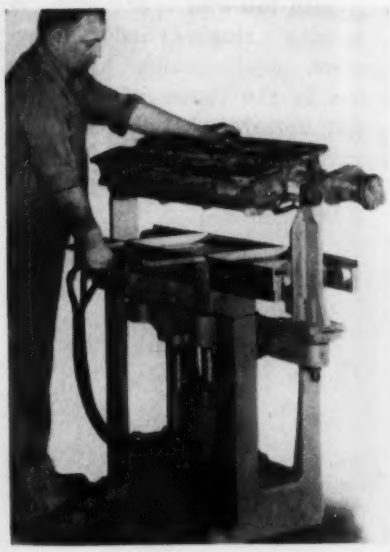
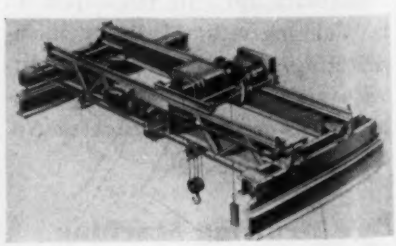
tioned easily and rapidly by means of parallel sets of dust-tight ball bearing rollers and guide rails. After the core plate is clamped into place, the core box is lifted pneumatically for manual roll over.



Removal of plate clamps after the box is lowered, permits the box to be drawn automatically for core removal and subsequent handling operations. The machine is air powered by standard 80 psi line pressure. It handles core boxes ranging from 24 to 36 in. *Spo Inc. For more data check No.* 39 *on postcard, p.* 35.

E-Type Cranes

New E-type cranes, built in capacities ranging up to 12 tons, and spans from 20 to 60 ft, are designed



for intermittent duty, and are usually operated from the floor by means of a pendant pushbutton control station. Bridge or trolley may be supplied without motors for handpower operation, or the crane may be supplied with cab

Turn to Page 116

She's dividing the plus and the minus

Here's one way the "quiet" is built into a Federal Ball Bearing . . . in the *selective assembly* of balls and race-rings of matching dimensions.

After all tolerances and dimensions are checked, Federal Ball Bearings are tested for quiet running, smoothness, parallelism and fit. That's why, when you need a power-saving bearing that permits heavier load margins at higher speeds, "Federals" are equipped to carry out your specifications.

Your application may benefit from a Federal Ball Bearing installation. Our representative in your vicinity will be glad to call and discuss it with you. Why not call him in now? Or write for our catalog "K". It describes the full range of Federal Ball Bearings.

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control. The cranes embody latest design features such as fluid drive and magnetic control. Low, initial cost is made possible by use of stock parts and other components built in quantity. *Whiting Corp. For more data check No.* 40 *on postcard, p.* 35.

Headrest Goggle

A headrest goggle for gas welders, cutters, burners, brazers and furnace men is easily adjustable to any head size. The free-floating

headgear provides perfect balance with no overhanging weight. Goggles can be worn over eyes or personal glasses. They have well ventilated, indirect side shields to keep out sparks, metal splashes and stray light rays. *American Optical Co. For more data check No.* 41 *on postcard, p.* 35.

Flexible Tubing

A new lightweight, flexible tubing called Spiratube is wear and heat resistant, portable, retractable, and easy to assemble. Spiratube satisfies ducting requirements from 3 to 30 in. ID for air and other gases, powdered, granular, or light solids. The tubing consists of a rust-proof, spring-steel helical core, covered inside and out by double-seam stitched cotton duck, coated with neoprene. Standard variations employ multiple-ply walls and various coatings for a wide variety of services. *Flexible Tubing Corp. For more data check No.* 42 *on postcard, p.* 35.

Resume Your Reading on Page 39

MARKET

Briefs and Bulletins

price drop—Three steel companies knocked down the price 15c per base box on special coated manufacturing ternes in basis weights of 55-lb to 195-lb. Subsidiaries of U. S. Steel, the Carnegie-Illinois Steel Corp. and the Tennessee Coal, Iron and Railroad made their cuts effective May 3. Carnegie's new price is $6.35 per base box, while Tennessee Coal's sank to $6.45. Wheeling Steel announced a similar reduction. The U. S. Steel subsidiaries explained that the price fall was necessary to make special coated manufacturing ternes directly competitive with .25-lb electrolytic tin plate in view of the interchangeability of the two products and the rising demand for electrolytic.

turning point—With the new order index at its highest level in 4 years, the Bureau of Labor Statistics predicts that machine tool production may take an upward climb of 20 pct this year. Reasons given for the Bureau's optimism are regional employment increases, a 2-hr longer average work week, new orders for special purpose tools, and the nearly vanished surplus of war-built general purpose tools. Gains are still spotty. New York, Rhode Island, and Illinois report greater than average early-year gains and smallest employment declines are reported by Ohio firms.

auto overtime—The auto production race is expected to get even more torrid now that Chrysler is swinging back into production. General Motors, Ford, and Chrysler are all committed to Saturday work. So far there is no indication that the independents will join the big three in these work schedules which are set up to August. Even though production records are falling, there is no sign of a letup in their efforts to get still more steel.

video factor—A major factor in current demand for silicon steel is the high-level production of the television industry. TV makers are now shooting for a 5-million-set-year. If they hit their mark—and first quarter output indicates they will come close, barring a cutback—they will use about 45,000 tons of silicon steel this year. TV is also boosting stainless steel sales.

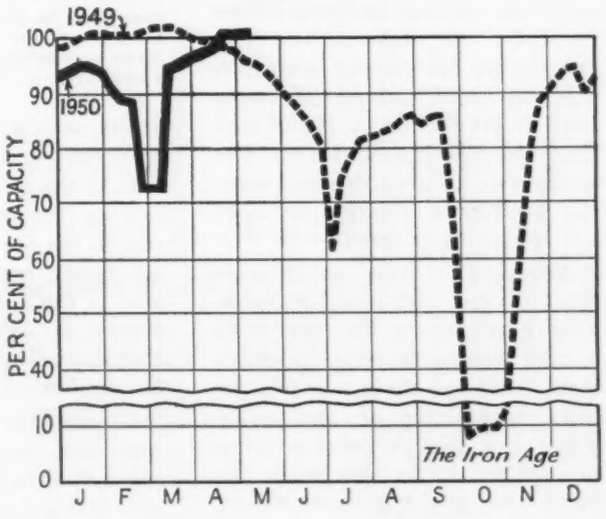
strip boost—An increase of $5 per ton on carbon cold-rolled strip, 20 gage and heavier, effective May 1, was announced by Elliott Bros. Steel Co., New Castle, Pa. The new price is $4.40 per 100 lb.

Canadian pig—Pig iron prices in Canada have been marked up $2 per gross ton. The new price for base grade, 2.25 silicon and under, is $50.23; malleable, $51.23; basic, $50.23, delivered gross ton, Toronto. Demand for merchant pig iron is holding at a good level but producers can maintain spot delivery schedule. Producers are mum on the possibility of steel prices taking the upswing but the finger is pointed at higher prices for pig iron, steel scrap, and labor. Canadian steel mills are booked fully until October on sheets, plate and strip.

rolling along—The Equitable Life Assurance Society's freight car leasing plan gathers popularity as it rolls along. The Delaware & Hudson Railroad will lease 500 PS-1 type box cars to be built by Pullman-Standard under the plan, reports Joseph H. Nuelle, president of the road.

worth watching—Steel purchases by farm implements people are declining, but not drastically. The next 2 months will tell whether they overestimated their market when they boosted production schedules and built up big inventories of finished products earlier this year.

Steel Operations



District Operating Rates—Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
April 30	101.5*	104.5	91.0	84.0	94.5	104.0	104.0	104.0	101.0*	100.0	89.0	82.0	91.5	100.5
May 7	101.5	104.0	91.0	86.0	96.0	104.0	105.0	106.0	100.0	100.5	87.5	82.0	91.5	100.5

* Revised.

Nonferrous Metals OUTLOOK

Market Activities

Buyers rush for copper to beat price advance . . . Advances in zinc and lead don't curb buying . . . New stockpiling set for zinc . . . Cadmium market weakens.

by John Anthony

New York—Heavy buying interest was maintained in the metal markets last week. But June copper was largely taken up and buyers were anxious to place orders for July. Zinc demand was very strong, for die casting, galvanizing and brass mill requirements. Lead buying is at a lower rate than the heavy business of two weeks ago. But producers report the market is orderly and they are selling their intake.

Advances of ¼¢ per lb were made in zinc and lead last week. This development did not serve to dim buying interest in either metal. But one effect was to stimulate speculation on the probability of a further price advance in copper. Early this week the price rise had not materialized, but the market is ripe for an advance.

Copper Price Factors

Consumer order volume continues high, reflecting the current high rate of industrial activity, producer inventories are virtually at rock bottom. Consumers are rushing the market to get in ahead of the certain price advance if the 2¢ tariff should go back into effect at the end of June. Speculation on the commodity exchange and in the scrap market is exerting strong pressure. Most important is the fact that sellers who oppose a higher price have no important free tonnage to offer to the market.

Government has been partly responsible for the extremes at which the zinc market has fluctuated in the last few years. When the market was at a low ebb last year, the Government bought no zinc for the stockpile, but this year, when mining operations had not recovered from the effects of last year's curtailment, and when normal demand is taxing the capacity of the industry, stockpiling requirements are superimposed on the market. The Government's objective for the second quarter was 30,000 tons. Now it is learned that officials have been attempting to establish quotas with producers for the last half of the year.

Cadmium Market Weak

The cadmium market is showing real weakness for the first time since the end of the war. The present price of the metal, $2 per lb, has held firm since November 1948, even throughout the period last year when other metals were tobogganing. Now buyers are limiting their inventories, expecting a reduction in price.

Increased foundry buying of aluminum ingots is having a strengthening effect on the secondary aluminum market. Prices of some grades advanced by ¼¢ to ½¢ last week.

NONFERROUS METALS PRICES

	May 3	May 4	May 5	May 6	May 8	May 9
Copper, electro, Conn.	19.50	19.50	19.50	19.50	19.50	19.50
Copper, Lake, Conn.	19.625	19.625	19.625	19.625	19.625	19.625
Tin, Straits, New York	77.25	76.75	76.75	....	76.875	*77.125
Zinc, East St. Louis	11.25	11.50	11.50	11.50	11.50	12.00
Lead, St. Louis	10.80	11.05	11.05	11.05	11.05	11.05

Note: Quotations are going prices.
* Tentative.

MILL PRODUCTS

Aluminum

(Base prices, cents per pound, base 30,000 lb, f.o.b. shipping point, freight allowed)

Flat Sheet: 0.188 in., 2S, 3S, 26.9¢; 4S, 61S-O, 28.8¢; 52S, 30.9¢; 24S-O, 24S-OAL, 29.8¢; 75S-O, 75S-OAL, 36.3¢; 0.081 in., 2S, 3S, 27.9¢; 4S, 61S-O, 30.2¢; 52S, 32.3¢; 24S-O, 24S-OAL, 30.9¢; 75S-O, 75S-OAL, 38¢; 0.032 in., 2S, 3S, 29.5¢; 4S, 61S-O, 33.5¢; 52S, 36.2¢; 24S-O, 24S-OAL, 37.9¢; 75S-O, 75S-OAL, 47.6¢.

Plate: ¼ in., and heavier: 2S, 3S, F, 23.8¢ 4S-F, 26¢; 52S-F, 27.1¢; 61S-O, 26.6¢; 24S-F, 24S-FAL, 27.1¢; 75S-F, 75S-FAL, 33.9¢.

Extruded Solid Shapes: Shape factors 1 to 4, 33.6¢ to 64¢; 11 to 13, 34.6¢ to 76¢; 23 to 25, 36.7¢ to $1.05; 35 to 37, 44¢ to $1.53; 47 to 49, 63.5¢ to $2.20.

Rod, Rolled: 1.5 to 4.5 in., 2S-F, 3S-F, 34¢ to 30.5¢; Cold-finished, 0.375 to 3 in., 2S, 3S, 36.5¢ to 32¢.

Screw Machine Stock: Rounds, 11S-T3, R317-T4: ⅛ to 11/32 in., 49¢ to 38¢; ⅜ to 1½ in., 37.5¢ to 35.5¢; 1 9/16 to 3 in., 35.5¢ to 32.5¢; 17S-T4 lower by 1¢ per lb. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in.: 2S, 36¢ to 26.5¢; 52S, 44¢ to 32¢; 56S, 47¢ to 38.5¢; 17S-T4, 50¢ to 34.5¢; 61S-T4, 44.5¢ to 34¢; 75S-T-6, 76¢ to 55¢.

Extruded Tubing, Rounds: 63S-T5; OD in in.: 1¼ to 2, 33¢ to 48.5¢; 2 to 4, 30¢ to 40.8¢; 4 to 6, 30.5¢ to 37.3¢; 6 to 9, 31¢ to 39.8¢.

Roofing Sheet, Flat: 0.019 in. x 28 in, per sheet, 72 in., $1.045; 96 in., $1.393; 120 in., $1.742; 144 in., $2.090. Gage 0.024 in. x 28 in., 72 in., $1.271; 96 in., $1.695; 120 in., $2.116; 144 in., $2.540.

Coiled Sheet: 0.019 in. x 28 in., 25.7¢ per lb; 0.024 in. x 28 in., 24.7¢ per lb.

Magnesium

(Cents per lb, f.o.b. mill, freight allowed)

Sheets and Plate: Ma, FSa, ¼ in., 54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58¢-60¢; 10, 59¢-61¢; 12, 63¢-65¢; 14, 69¢-74¢; 16, 76¢-81¢; 18, 84¢-89¢; 20, 96¢-$1.01; 22, $1.22-$1.31; 24, $1.62-$1.75. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, diam in., ¼ to 0.311, 58¢; ½ to ¾, 46¢; 1¼ to 1.749, 43¢; 2½ to 5, 41¢. Other alloys higher. Base: Up to ¾ in. diam., 10,000 lb; ¾ in. to 1¾ in., 20,000 lb; 1¾ in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangle: M, in weight per ft, for perimeters of less than size indicated, 0.10 to 0.11 lb per ft, per. up to 3.5 in., 55¢; 0.22 to 0.25 lb per ft, per. up to 5.9 in., 51¢; 0.50 to 0.59 lb per ft, per. up to 8.6 in., 47¢; 1.8 to 2.59 lb per ft, per. up to 19.5 in., 44¢; 4 to 6 lb per ft, per. up to 28 in., 43¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb; ½ lb to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, wall thickness, outside diam. in., 0.049 to 0.057, ¼ to 5/16, $1.14; 5/16 to ⅜, $1.02; ½ to ⅝, 76¢; 1 to 2 in., 65¢; 0.065 to 0.082, ⅜ to 7/16, 85¢; ⅝ to ¾, 62¢; 1 to 2 in., 57¢; 0.165 to 0.219, ⅝ to ¾, 54.5¢; 1 to 2 in., 53¢; 3 to 4 in., 49¢. Other alloys higher. Base, OD in in.: Up to 1½ in., 10,000 lb; 1½ in. to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

Nickel and Monel

(Base prices, cents per lb, f.o.b. mill)

	Nickel	Monel
Sheets, cold-rolled	60	47
Strip, cold-rolled	66	50
Rods and bars	56	45
Angles, hot-rolled	56	45
Plates	58	46
Seamless tubes	89	80
Shot and blocks	..	40

Copper, Brass, Bronze

(Cents per lb, freight prepaid on 200 lb)

	Sheets	Rods	Extruded Shapes
Copper	33.18	....	32.78
Copper, h-r	....	29.03	....
Copper, drawn	....	30.28	....
Low brass	31.07	30.76	....
Yellow brass	29.61	29.30	....
Red brass	31.56	31.25	....
Naval brass	34.26	28.32	29.58
Leaded brass	....	23.99	28.02
Com'l bronze	32.58	32.27	....
Manganese bronze	37.76	31.66	33.22
Phosphor bronze	50.90	51.15	....
Muntz metal	32.48	28.04	29.29
Everdur, Herculoy, Olympic, etc.	37.93	36.87	....
Nickel silver 10 pct	40.51	42.69	47.46
Arch. bronze	....	....	28.02

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, 10,000 lb, freight allowed	17.00
Aluminum pig	16.00
Antimony, American, Laredo, Tex.	24.50
Beryllium copper, 3.75-4.25% Be dollars per lb contained Be	$24.50
Beryllium aluminum 5% Be, dollars per lb contained Be	$56.00
Bismuth, ton lots	$2.00
Cadmium, del'd	$2.00
Cobalt, 97-99% (per lb)	$1.80 to $1.87
Copper, electro, Conn. Valley	19.50
Copper, lake, Conn. Valley	19.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$100 to $110
Lead, St. Louis	11.05
Lead, New York	11.25
Magnesium, 99.8+%, f.o.b. Freeport Tex., 10,000 lb	20.50
Magnesium, sticks, 100 to 500 lb	36¢ to 38¢
Mercury, dollars per 76-lb flask f.o.b. New York	$70 to $73
Nickel, electro, f.o.b. New York	42.97
Nickel oxide sinter, f.o.b. Copper Cliff, Ont., contained nickel	36.25
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$66 to $69
Silver, New York, cents per oz	72.75
Tin, New York	77.125
Zinc, East St. Louis	12.00
Zinc, New York	12.72
Zirconium copper, 50 pct	$6.20

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5-5 ingot	
No. 115	17.75-18.25
No. 120	17.25-18.25
No. 123	16.75-17.75
80-10-10 ingot	
No. 305	22.25
No. 315	20.25
88-10-2 ingot	
No. 210	28.25
No. 215	25.75
No. 245	19.25-21.50
Yellow ingot	
No. 405	15.00-16.50
Manganese bronze	
No. 421	21.25

Aluminum Ingot

(Cents per lb, of 30,000 lb)

95-5 aluminum-silicon alloys	
0.30 copper, max.	18.25-18.75
0.60 copper, max.	18.00-18.50
Piston alloys (No. 122 type)	16.75-17.25
No. 12 alum. (No. 2 grade)	16.50-17.00
108 alloy	16.75-17.25
195 alloy	17.50-18.00
13 alloy	18.50-18.75
AXS-679	16.75-17.25

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97½%	17.50-18.00
Grade 2—92-95%	16.50-17.00
Grade 3—90-92%	15.50-16.00
Grade 4—85-90%	15.00-15.50

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, in 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	36⅛
Electrodeposited	30¾
Rolled, oval, straight, delivered	34.34
Forged ball anodes	35
Brass, 80-20	
Cast, oval, 15 in. or longer	31¾
Zinc, oval, 99.886, f.o.b. Detroit	17¼
Ball anodes	16¼
Nickel 99 pct plus	
Cast	59.00
Rolled, depolarized	60.00
Cadmium	$2.15
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	79½

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	49¼
Copper sulfate, 99.5 crystals, bbl.	10¾
Nickel salts, single or double, 4-100 lb bags, frt allowed	18.00
Nickel chloride, 300 lb bbl	24.50
Silver cyanide, 100 oz lots, per oz	61¼
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc sulfate, 89 pct granular	7.15
Zinc cyanide, 100 lb drums	41¼

SCRAP METALS

Brass Mill Scrap

(Cents per pound; add ½¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	16½	15¾
Yellow brass	13⅞	12⅞
Red brass	15	14¼
Commercial bronze	15¼	14½
Manganese bronze	12¾	11⅞
Leaded brass rod ends	13	....

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	16.00-16.25
No. 2 copper wire	15.00-15.25
Light copper	14.00-14.25
Refinery brass	14.75*
Radiators	10.50

*Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer)

No. 1 copper wire	16.00-16.25
No. 2 copper wire	15.00-15.25
Light copper	14.00-14.25
No. 1 composition	13.50-13.75
No. 1 comp turnings	13.00-13.25
Rolled brass	11.50
Brass pipe	12.50
Radiators	10.50-10.75
Heavy yellow brass	10.25-10.50
Aluminum	
Mixed old cast	9.25- 9.50
Mixed old clips	10.25-10.50
Mixed turnings, dry	9.50
Pots and pans	9.75
Low copper	11.00-11.50

Dealers' Scrap

(Dealers' buying prices, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	14¾—15
No. 2 heavy copper and wire	13¾—14
Light copper	12¾—13
Auto radiators (unsweated)	9½— 9¾
No. 1 composition	12¼—12½
No. 1 composition turnings	11¾—12
Clean red car boxes	10¼—10½
Cocks and faucets	10¼—10½
Mixed heavy yellow brass	8½— 8½
Old rolled brass	9¾—10
Brass pipe	10¾—11
New soft brass clippings	11¼—11¾
Brass rod ends	10¼—10½
No. 1 brass rod turnings	10 —10¼

Aluminum

Alum. pistons and struts	5 — 5½
Aluminum crankcases	7½— 8
2S aluminum clippings	10½—11
Old sheet and utensils	7½— 8
Borings and turnings	4½
Misc. cast aluminum	7½— 8
Dural clips (24S)	7½— 8

Zinc

New zinc clippings	7½— 8
Old zinc	5½— 6
Zinc routings	4 — 4½
Old die cast scrap	4 — 4½

Nickel and Monel

Pure nickel clippings	21 —23
Clean nickel turnings	14 —15
Nickel anodes	20 —22
Nickel rod ends	20 —22
New Monel clippings	12 —14
Clean Monel turnings	8 — 9
Old sheet Monel	10 —12
Old Monel castings	9 —10
Inconel clippings	11 —13
Nickel silver clippings, mixed	8 —10
Nickel silver turnings, mixed	6 — 7

Lead

Soft scrap, lead	9 — 9¼
Battery plates (dry)	4¾— 5

Magnesium

Segregated solids	9 —10
Castings	5½— 6½

Miscellaneous

Block tin	60 —62
No. 1 pewter	38 —40
No. 1 auto babbitt	35 —37
Mixed common babbitt	9 — 9¼
Solder joints	12 —12½
Siphon tops	40 —42
Small foundry type	12½—13
Monotype	11¼—11¾
Lino. and stereotype	10¾—11¼
Electrotype	9 — 9¼
New type shell cuttings	12¾—13
Hand picked type shells	5¾— 6¼
Lino. and stereo. dross	4¼— 4¾
Electro. dross	2¾— 3

MARKETS—PRICES—TRENDS

SCRAP
Iron & Steel

Openhearth and Foundry Grades Advance Again

Prices on steelmaking grades moved higher in almost all major areas this week in a market which bordered on the frenzied in spots. It is no longer safe to discount the possibility of a runaway market. Brokers were doing their best this week to prevent wild price fluctuations but many were caught short.

No. 1 steel was up 50¢ a ton in Pittsburgh and $1.50 a ton in Philadelphia. It was $1.00 a ton higher at Cleveland and Youngstown, and $2.00 higher in Detroit. At Chicago it was $1.00 stronger.

The sudden intense activity has many traders confused. There is a strong short interest in several centers—proof that the sharp upswing came as a surprise. The result is that few tonnage orders are being taken.

PITTSBURGH—The market moved upward again this week. No. 1 heavy melting steel advanced 50¢ to a top of $36 on a sale of 10,000 tons to a district consumer. Reflecting the strong demand for blast furnace scrap, machine shop turnings and short turnings were up 50¢. Low phos advanced $1. The railroad list was strong with No. 1 RR. heavy melting jumping $2.50 to $38.50; specialties were up $3. Cast scrap was higher.

CHICAGO—The market was strong during the past week. Short coverings plus spot purchases were made at an average of $1 over old prices. Ingot makers melting for conversion are paying premiums but so far have concentrated mostly on railroad scrap. Rails of all types were much stronger. These items are still very bullish. The $33 reported in this column last week for No. 1 railroad heavy melting was in error, the price shown in last week's price list was correct at $35 to $36. Cast grades are much stronger.

PHILADELPHIA — New mill buying raised the prices of heavy melting steel by $1.50 a ton last week. The added strength in the market is due primarily to higher prices at Pittsburgh. The spread for machine shop turnings was narrowed to 50¢. The low phos bundles price was up with No. 1 heavy melting. Crop rails are up $2.50, on higher prices being paid railroads for use as rerolling rails. The requirements of local mills are moderate. Shipments are fairly good, but the car shortage is still handicapping the trade.

NEW YORK—The market here is hot and active. Most brokers were trying to cover old orders and hoping to break even or hold down their losses. On Monday, No. 1 steel was being bought at $26 but there was no assurance that that figure would hold for long. All steelmaking grades shared the strong tone. Cast was firm but unchanged. The runaway market which most observers agreed was unlikely this year is not here yet—but few care to predict that it won't come.

DETROIT—The scrap market here is very strong. During the past week all major grades have increased in value and the upward trend shows no signs of blowing itself out. Local mills are not in the market at the prices quoted but actual buying or offers to buy have clearly justified the prices quoted. No. 1 bundles, much in demand for conversion, continue to lead the way here. Reports of industrial bundles selling as high as $37 have been heard.

CLEVELAND—No. 1 heavy melting steel is quotable at $36 in the Valley this week after an appraisal of all factors, including sale of a very small tonnage at that figure. Primarily because there is a terrific short interest the market is confused and looks to be about ready to run wild. A lot of scrap was sold at a lower price but not bought, and brokers are trying desperately to cover their short positions. Rumor has it that a high of $37 has been paid by brokers in the Valley. Whether it has or hasn't, mills are not inclined to put out new paper right now.

ST. LOUIS—Covering by dealers has caused them to increase their prices for No. 2 heavy melting steel by $1 per ton, although prices to be paid by the mills are unchanged. Some foundry grades are also higher as a result of increased demand by the consumers. The movement to the St. Louis industrial district has improved as a result of higher prices.

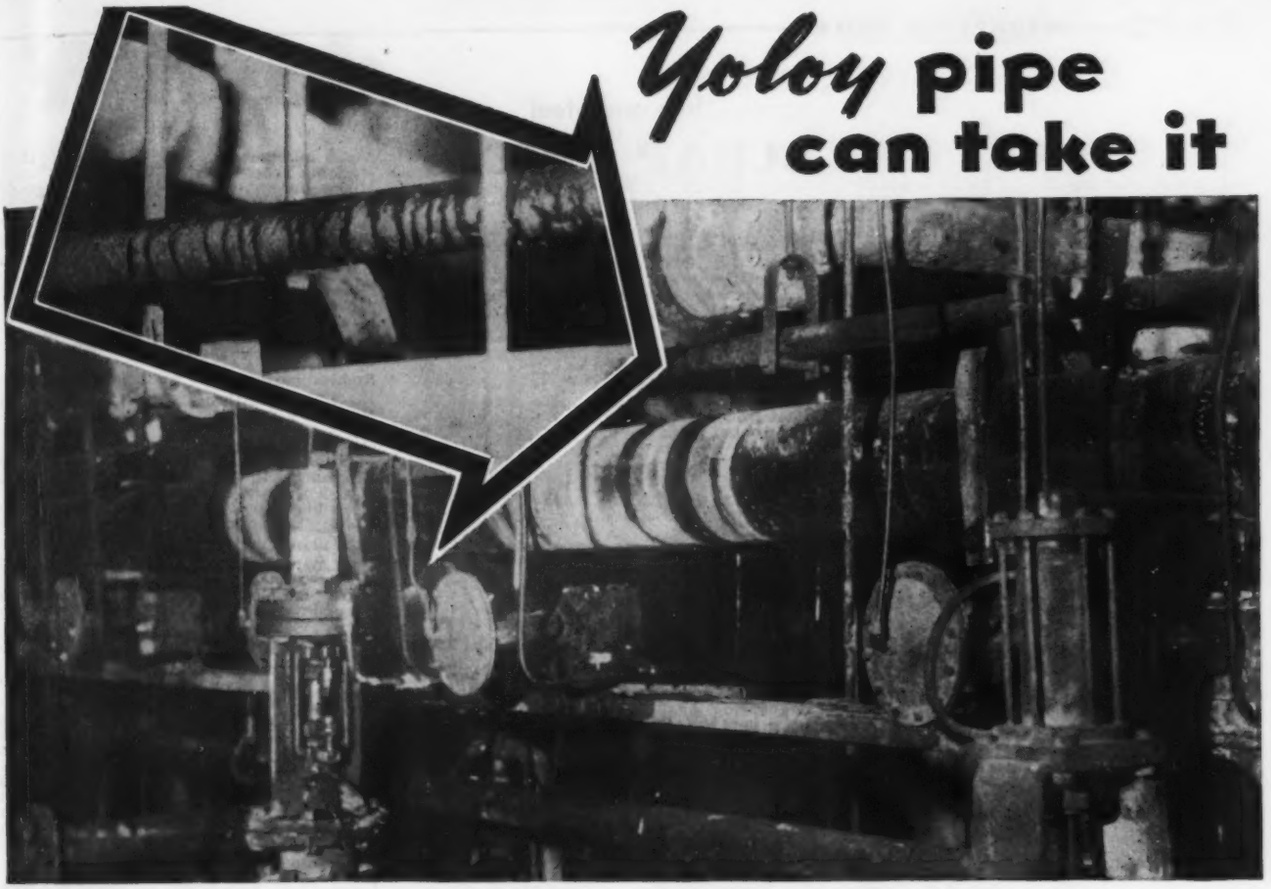
CINCINNATI — Prices of openhearth grades were unchanged here at press time, largely because most district consumers withdrew temporarily from the market following last week's flurry. Tonnage is moving freely on those orders, despite higher markets in adjacent districts. Foundry material is in greater demand, particularly the steel grades, but cast is moving rather well. The market here is strong, but not out of control.

BOSTON — Steelmaking grades were very active here during the past week, even though they have not yet broken through the year's highs. There was reason to believe they might move higher before the week was out. Turnings were also strong but cast grades were somewhat softer. The overall tone of the market was hectic and there has been a lot of scrambling for tonnages to fill orders.

BIRMINGHAM — The top prices on steelmaking grades were quotable $1 a ton higher this week on an appraisal of all market factors. There has been no recent new business on openhearth grades because sellers are holding back for higher prices. Another bullish factor is light inventories in dealers' yards. Railroad items were also stronger on recent lists.

BUFFALO—After a prolonged period of small sales and erratic tendencies, the market in blast furnace scrap was raised approximately $5 on sales to a leading consumer. Borings and turnings reached a range of $25-$26 a ton. The advance brings the local market in line with prices in other centers. Strength also continues to rule other items.

Yoloy pipe can take it



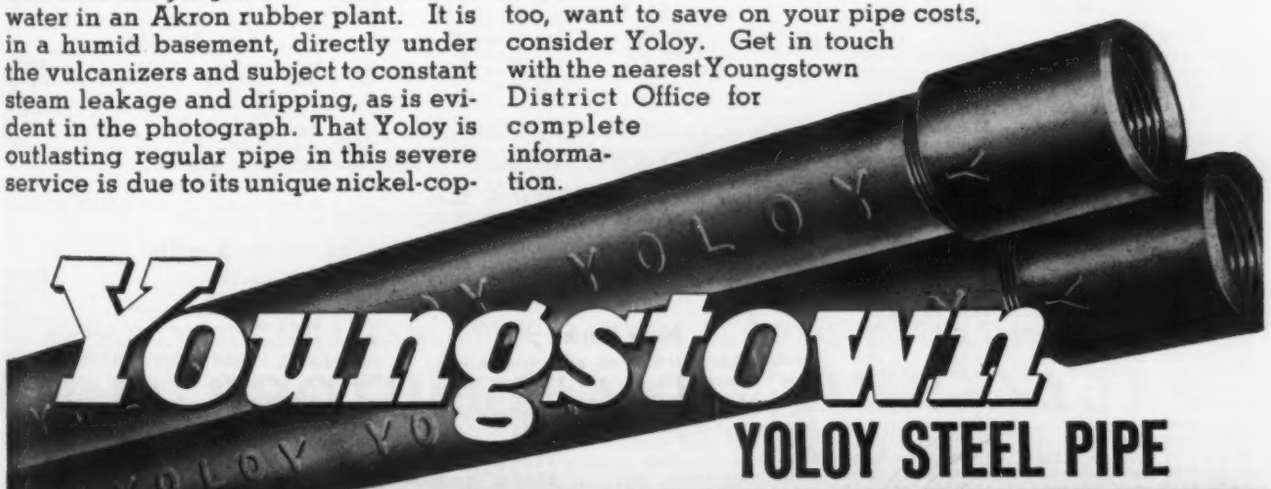
In the arrow inset above, you see a piece of 1½" Yoloy Continuous Weld Pipe. Subject to continual corrosion, it is still in use after nearly 4 years. Regular pipe used here previously had failed and been replaced at least once a year.

This Yoloy pipe is in a booster pressure line carrying 500 P.S.I. raw cold water in an Akron rubber plant. It is in a humid basement, directly under the vulcanizers and subject to constant steam leakage and dripping, as is evident in the photograph. That Yoloy is outlasting regular pipe in this severe service is due to its unique nickel-copper content or low-alloy composition.

In this installation Yoloy pipe has saved the manufacturer 50% of his pipe cost, 75% of his installation labor cost and has avoided three costly shutdowns for pipe repairs.

Yoloy standard weight black pipe is carried in stock for prompt delivery in sizes from ¾" to 3", inclusive. If you, too, want to save on your pipe costs, consider Yoloy. Get in touch with the nearest Youngstown District Office for complete information.

THE YOUNGSTOWN SHEET & TUBE CO. 1900 YOUNGSTOWN 1950 50 YEARS OF SERVICE



Youngstown

YOLOY STEEL PIPE

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel

General Offices — Youngstown 1, Ohio

Export Office - 500 Fifth Avenue, New York

PIPE AND TUBULAR PRODUCTS - CONDUIT - BARS - RODS - COLD FINISHED CARBON AND ALLOY BARS - SHEETS - PLATES - WIRE - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - RAILROAD TRACK SPIKES

Iron and Steel

SCRAP PRICES

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$35.50 to $36.00
No. 2 hvy. melting	31.50 to 32.00
No. 1 bundles	35.50 to 36.00
No. 2 bundles	28.00 to 28.50
Machine shop turn.	25.50 to 26.00
Mixed bor. and ms. turns.	25.50 to 26.00
Shoveling turnings	28.00 to 28.50
Cast iron borings	27.00 to 27.50
Low phos. plate	37.50 to 38.00
Heavy turnings	33.00 to 34.00
No. 1 RR. hvy. melting	38.00 to 38.50
Scrap rails, random lgth.	39.50 to 40.00
Rails 2 ft and under	41.50 to 42.50
RR. steel wheels	39.50 to 40.00
RR. spring steel	39.50 to 40.00
RR. couplers and knuckles	39.50 to 40.00
No. 1 machinery cast	41.00 to 42.00
Mixed yard cast.	36.50 to 37.00
Heavy breakable cast.	33.00 to 34.00
Malleable	37.00 to 38.00

Chicago

No. 1 hvy. melting	$32.00 to $33.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 factory bundles	32.00 to 33.00
No. 1 dealers' bundles	28.00 to 29.00
No. 2 dealers' bundles	24.00 to 25.00
Machine shop turn.	21.00 to 22.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	21.50 to 22.00
Cast iron borings	21.00 to 22.00
Low phos. forge crops	32.00 to 33.00
Low phos. plate	32.50 to 33.00
No. 1 RR. hvy. melting	35.00 to 36.00
Scrap rails, random lgth.	39.00 to 41.00
Rerolling rails	49.00 to 50.00
Rails 2 ft and under	45.00 to 47.00
Locomotive tires, cut	34.00 to 35.00
Cut bolsters & side frames	31.00 to 32.00
Angles and splice bars	37.00 to 38.00
RR. steel car axles	47.00 to 48.00
RR. couples and knuckles	32.00 to 33.00
No. 1 machinery cast.	45.00 to 46.00
No. 1 agricul. cast.	40.00 to 41.00
Heavy breakable cast.	30.00 to 31.00
RR. grate bars	30.00 to 31.00
Cast iron brake shoes	31.00 to 32.00
Cast iron car wheels	36.00 to 37.00
Malleable	40.00 to 41.00

Philadelphia

No. 1 hvy. melting	$27.50 to $28.50
No. 2 hvy. melting	25.50 to 26.50
No. 1 bundles	27.50 to 28.50
No. 2 bundles	22.00 to 23.00
Machine shop turn.	19.00 to 19.50
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	20.00 to 21.00
Low phos. punchings, plate	30.00 to 31.00
Low phos. 5 ft and under	29.00 to 30.00
Low phos. bundles	27.50 to 28.50
Hvy. axle forge turn.	27.50 to 28.50
Clean cast chem. borings	29.00 to 30.00
RR. steel wheels	33.00 to 34.00
RR. spring steel	33.00 to 34.00
Rails 18 in. and under	41.00 to 42.00
No. 1 machinery cast	37.00 to 38.00
Mixed yard cast	33.00 to 34.00
Heavy breakable cast	35.00 to 36.00
Cast iron carwheels	39.00 to 40.00
Malleable	40.00 to 41.00

Cleveland

No. 1 hvy. melting	$32.00 to $32.50
No. 2 hvy. melting	29.00 to 29.50
No. 1 busheling	32.00 to 32.50
No. 1 bundles	32.00 to 32.50
No. 2 bundles	25.50 to 26.00
Machine shop turn.	21.50 to 22.00
Mixed bor. and turn.	24.50 to 25.00
Shoveling turnings	24.50 to 25.00
Cast iron borings	24.50 to 25.00
Low phos. 2 ft and under	32.00 to 32.50
Steel axle turn.	30.00 to 30.50
Drop forge flashings	32.00 to 32.50
No. 1 RR. hvy. melting	38.00 to 38.50
Rails 3 ft and under	43.00 to 43.50
Rails 18 in. and under	44.00 to 45.00
No. 1 machinery cast.	44.00 to 44.50
RR. cast	44.00 to 44.50
RR. grate bars	32.00 to 33.00
Stove plate	36.00 to 37.00
Malleable	40.00 to 41.00

Youngstown

No. 1 hvy. melting	$35.50 to $36.00
No. 2 hvy. melting	32.50 to 33.00
No. 1 bundles	35.50 to 36.00
No. 2 bundles	$29.50 to $30.00
Machine shop turn.	24.00 to 24.50
Shoveling turnings	26.00 to 26.50
Cast iron borings	26.00 to 26.50
Low phos. plate	36.50 to 37.00

Buffalo

No. 1 hvy. melting	$29.50 to $30.00
No. 2 hvy. melting	27.50 to 28.00
No. 1 busheling	27.50 to 28.00
No. 1 bundles	28.50 to 29.00
No. 2 bundles	26.00 to 26.50
Machine shop turn.	23.00 to 23.50
Mixed bor. and turn.	25.00 to 26.00
Shoveling turnings	26.00 to 26.50
Cast iron borings	25.50 to 26.00
Low phos. plate	31.00 to 31.50
Scrap rails, random lgth.	33.50 to 34.00
Rails 2 ft and under	38.50 to 39.00
RR. steel wheels	33.50 to 36.00
RR. spring steel	33.50 to 36.00
RR. couplers and knuckles	33.50 to 36.00
No. 1 machinery cast.	38.00 to 38.50
No. 1 cupola cast.	36.00 to 36.50
Stove plate	34.00 to 34.50
Small indus. malleable	30.00 to 30.50

Birmingham

No. 1 hvy. melting	$26.00 to $27.00
No. 2 hvy. melting	24.00 to 25.00
No. 2 bundles	22.00 to 23.00
No. 1 busheling	26.00 to 27.00
Machine shop turn.	21.00 to 21.50
Shoveling turnings	21.00 to 22.00
Cast iron borings	19.00 to 19.50
Bar crops and plate	31.50 to 32.00
Structural and plate	31.50 to 32.00
No. 1 RR. hvy. melt.	29.50 to 30.00
Scrap rails, random lgth.	34.50 to 35.00
Rerolling rails	40.50 to 41.00
Rails 2 ft and under	37.50 to 38.00
Angles & splice bars	36.00 to 37.00
Std. steel axles	31.00 to 32.00
No. 1 cupola cast.	35.00 to 36.00
Stove plate	30.50 to 31.50
Cast iron carwheels	30.00 to 31.00

St. Louis

No. 1 hvy. melting	$31.00 to $32.00
No. 2 hvy. melting	28.00 to 29.00
No. 2 bundled sheets	26.50 to 27.50
Machine shop turn.	18.00 to 19.00
Shoveling turnings	20.00 to 21.00
Rails, random lengths	36.00 to 38.00
Rails 3 ft and under	41.00 to 43.00
Locomotive tires, uncut	32.00 to 34.00
Angles and splice bars	38.00 to 39.00
Std. steel car axles	45.00 to 46.00
RR. spring steel	37.00 to 38.00
No. 1 machinery cast.	38.00 to 39.00
Hvy. breakable cast.	32.00 to 33.00
Cast iron brake shoes	33.00 to 35.00
Stove plate	33.00 to 34.00
Cast iron car wheels	37.00 to 38.00
Malleable	35.00 to 36.00

New York

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$25.50 to $26.00
No. 2 hvy. melting	21.50 to 22.00
No. 2 bundles	20.00 to 20.50
Machine shop turn.	15.50 to 16.00
Mixed bor. and turn.	15.50 to 16.00
Shoveling turnings	17.00 to 17.50
Clean cast chem. bor.	23.00 to 24.00
No. 1 machinery cast.	30.00 to 30.50
Mixed yard cast.	28.00 to 28.50
Charging box cast.	29.00 to 30.00
Heavy breakable cast.	29.00 to 30.00
Unstrp. motor blocks	21.00 to 21.50

Boston

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$25.00 to $25.50
No. 2 hvy. melting	20.00 to 20.50
No. 1 bundles	25.00 to 25.50
No. 2 bundles	$18.50 to $19.50
Machine shop turn.	15.00 to 15.50
Mixed bor. and turn.	14.00 to 14.50
Shoveling turnings	16.50 to 17.50
No. 1 busheling	22.00 to 22.50
Clean cast chem. borings	19.50 to 20.00
No. 1 machinery cast.	30.00 to 31.00
No. 2 machinery cast.	27.00 to 28.00
Heavy breakable cast.	27.00 to 28.00
Stove plate	26.00 to 27.00

Detroit

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$28.00 to $29.00
No. 2 hvy. melting	26.00 to 26.50
No. 1 bundles	34.00 to 34.50
New busheling	32.00 to 32.50
Flashings	28.00 to 29.00
Machine shop turn.	18.50 to 19.00
Mixed bor. and turn.	18.50 to 19.00
Shoveling turnings	22.50 to 23.00
Cast iron borings	22.50 to 23.00
Low phos. plate	32.50 to 33.00
No. 1 cupola cast.	39.00 to 40.00
Heavy breakable cast.	32.00 to 33.00
Stove plate	34.00 to 35.00
Automotive cast.	42.00 to 43.00

Cincinnati

Per gross ton, f.o.b. cars:

No. 1 hvy. melting	$31.50 to $32.00
No. 2 hvy. melting	26.50 to 27.00
No. 1 bundles	31.50 to 32.00
No. 2 bundles, black	25.50 to 26.00
No. 2 bundles, mixed	22.50 to 23.00
Machine shop turn.	17.50 to 18.00
Mixed bor. and turn.	19.50 to 20.00
Shoveling turnings	20.50 to 21.00
Cast iron borings	20.50 to 21.00
Low phos. 18 in. under	37.50 to 38.00
Rails, random lengths	39.00 to 40.00
Rails, 18 in. and under	47.50 to 48.50
No. 1 cupola cast.	44.00 to 45.00
Hvy. breakable cast.	36.50 to 37.50
Drop broken cast.	45.50 to 46.50

San Francisco

No. 1 hvy. melting	$20.00
No. 2 hvy. melting	18.00
No. 1 bundles	16.00
No. 2 bundles	16.00
No. 3 bundles	13.00
Machine shop turn.	9.00
Elec. fur. 1 ft and under	28.00
No. 1 RR. hvy. melting	20.00
Scrap rails, random lgth.	20.00
No. 1 cupola cast.	$30.00 to 33.50

Los Angeles

No. 1 hvy. melting	$20.00
No. 2 hvy. melting	18.00
No. 1 bundles	16.00
No. 2 bundles	16.00
No. 3 bundles	13.00
Mach. shop turn.	5.00
Elec. fur. 1 ft and under	30.00
No. 1 RR. hvy. melting	20.00
No. 1 cupola cast.	$35.50 to 38.00

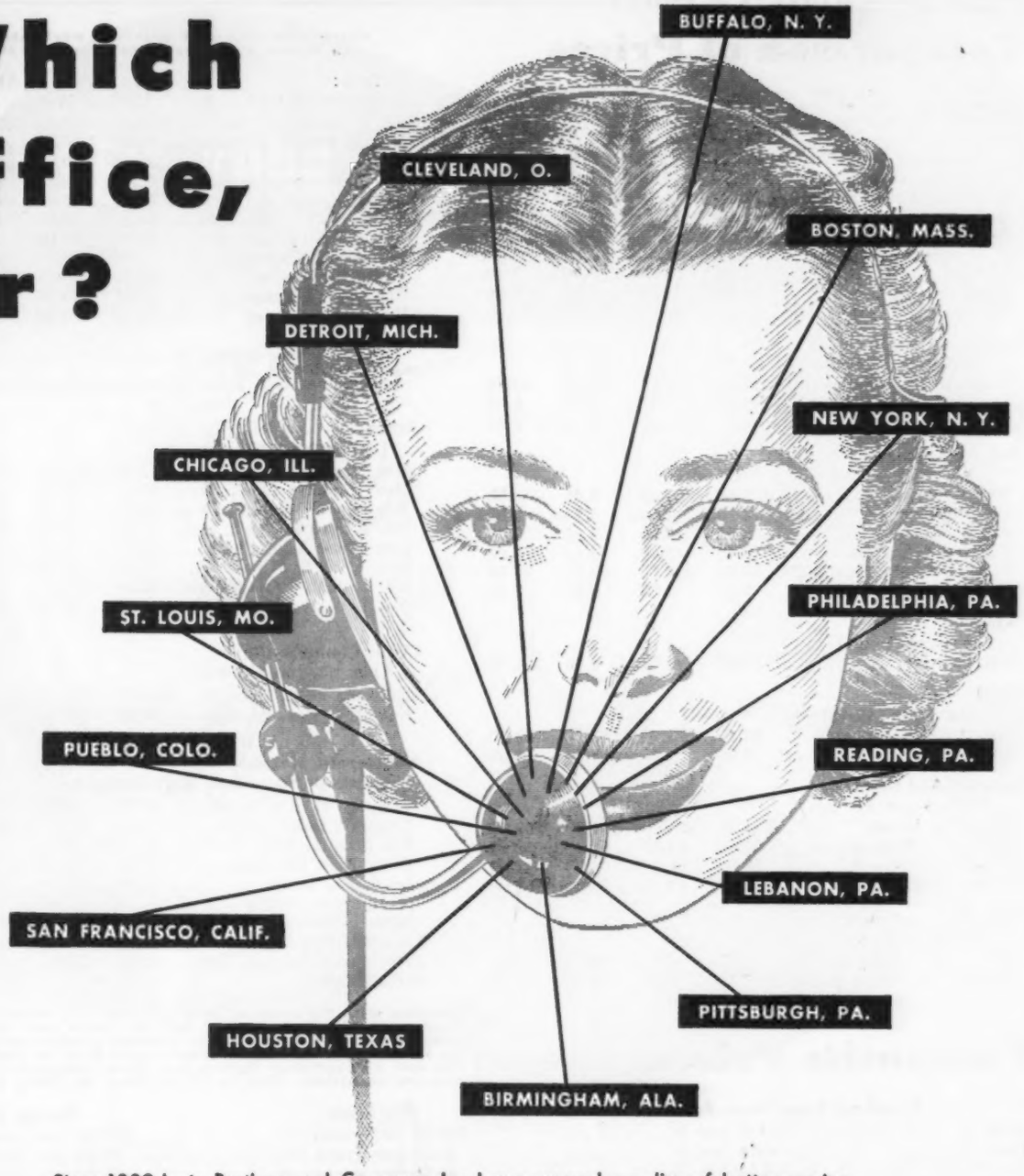
Seattle

No. 1 hvy. melting	$18.00
No. 2 hvy. melting	18.00
No. 1 bundles	16.00
No. 2 bundles	16.00
No. 3 bundles	12.00
Elec. fur. 1 ft and under	$29.00 to 30.00
RR. hvy. melting	19.00
No. 1 cupola cast.	30.00 to 35.00
Heavy breakable cast.	20.00

Hamilton, Ont.

No. 1 hvy. melting	$27.00
No. 1 bundles	19.00
No. 2 bundles	19.00
Mechanical bundles	25.00
Mixed steel scrap	23.00
Mixed bor. and turn.	20.00
Rails, remelting	27.00
Rails, rerolling	30.00
Bushelings	21.50
Bush., new fact, prep'd	25.00
Bush., new fact, unprep'd.	20.00
Short steel turnings	20.00
Cast scrap	40.00

Which office, sir?



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The expansion of our organization, with offices located in 15 major cities, is in accordance with our policy to give better service to our customers.

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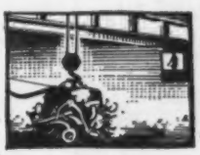

Branch Offices

BIRMINGHAM, ALA. Empire Bldg.	CHICAGO, ILL. 100 W. Monroe St.	HOUSTON, TEXAS 803-4-5 Milam Bldg.	PITTSBURGH, PA. Oliver Bldg.
BOSTON, MASS. Statler Bldg.	CLEVELAND, O. 1022 Midland Bldg.	LEBANON, PA. Luria Bldg.	PUEBLO, COLO. 334 Colorado Bldg.
BUFFALO, N.Y. Genesee Bldg.	DETROIT, MICH. 2011 Book Bldg.	NEW YORK, N.Y. Woolworth Bldg.	READING, PA. Luria Bldg.
ST. LOUIS, MO. 2110 Railway Exchange Bldg.		SAN FRANCISCO, CAL. Pacific Gas & Elec. Co., Bldg.	

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel: (cents per pound)	May 9, 1950	May 2, 1950	Apr. 11, 1950	May 10, 1949
Hot-rolled sheets	3.35	3.35	3.35	3.25
Cold-rolled sheets	4.10	4.10	4.10	4.00
Galvanized sheets (10 ga)	4.40	4.40	4.40	4.40
Hot-rolled strip	3.25	3.25	3.25	3.25
Cold-rolled strip	4.21	4.21	4.21	4.038
Plates	3.50	3.50	3.50	3.40
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R strip (No. 302)	33.00	33.00	33.00	33.00
Tin and Terneplate: (dollars per base box)				
Tinplate (1.50 lb) cokes	$7.50	$7.50	$7.50	$7.75
Tinplate, electro (0.50 lb)	6.60	6.60	6.60	6.70
Special coated mfg. ternes	*6.35*	6.50	6.50	6.65
Bars and Shapes: (cents per pound)				
Merchant bars	3.45	3.45	3.45	3.35
Cold-finished bars	4.145	4.145	4.145	3.995
Alloy bars	3.95	3.95	3.95	3.75
Structural shapes	3.40	3.40	3.40	3.25
Stainless bars (No. 302)	28.50	28.50	28.50	28.50
Wrought iron bars	9.50	9.50	9.50	9.50
Wire: (cents per pound)				
Bright wire	4.50	4.50	4.50	4.15
Rails: dollars per 100 lb)				
Heavy rails	$3.40	$3.40	$3.40	$3.20
Light rails	3.75	3.75	3.75	3.55
Semifinished Steel: (dollars per net ton)				
Rerolling billets	$54.00	$54.00	$54.00	$52.00
Slabs, rerolling	54.00	54.00	54.00	52.00
Forging billets	63.00	63.00	63.00	61.00
Alloy blooms, billets, slabs	66.00	66.00	66.00	63.00
Wire Rod and Skelp: (cents per pound)				
Wire rods	3.85	3.85	3.85	3.40
Skelp	3.15	3.15	3.15	3.25

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Pig Iron: (per gross ton)	May 9, 1950	May 2, 1950	Apr. 11, 1950	May 10, 1949
No. 2, foundry, Phila.	$50.42	$50.42	$50.42	$50.56
No. 2, Valley furnace	46.50	46.50	46.50	46.50
No. 2, Southern Cin'ti	49.08	49.08	49.08	45.47
No. 2, Birmingham	42.38	42.38	42.38	39.38
No. 2, foundry, Chicago†	46.50	46.50	46.50	46.50
Basic del'd Philadelphia	49.92	49.92	49.92	49.74
Basic, Valley furnace	46.00	46.00	46.00	46.00
Malleable, Chicago†	46.50	46.50	46.50	46.50
Malleable, Valley	46.50	46.50	46.50	46.50
Charcoal, Chicago	68.56	68.56	68.56	73.78
Ferromanganese‡	173.40	173.40	173.40	173.40

†The switching charge for delivery to foundries in the Chicago district is $1 per ton.
‡Average of U. S. prices quoted on Ferroalloy page.

Scrap: (per gross ton)				
Heavy melt'g steel, P'gh.	$35.75	$35.25	$32.75	$22.75
Heavy melt'g steel, Phila.	28.00	26.50	25.25	22.00
Heavy melt'g steel, Ch'go	32.50	31.50	28.50	23.50
No. 1 hy. com. sh't, Det.	34.25	32.75	26.75	16.75
Low phos. Young'n	36.75	35.75	33.75	24.75
No. 1, cast, Pittsburgh	41.50	40.50	39.50	27.75
No. 1, cast, Philadelphia	37.50	37.50	37.50	28.00
No. 1, cast, Chicago	45.50	42.50	41.50	28.00
Coke: Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.25	$14.25	$14.25	$14.50
Foundry coke, prompt	16.25	16.25	16.25	16.50
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro, Conn.	19.50	19.50	18.50	18.00
Copper, Lake Conn.	19.625	19.625	18.625	18.625
Tin Straits, New York	77.125†	76.50	76.50	$1.03
Zinc, East St. Louis	12.00	11.25	10.50	12.00
Lead, St. Louis	11.05	10.80	10.30	13.85
Aluminum, virgin	17.00	17.00	17.00	17.00
Nickel electrolytic	42.97	42.97	42.97	42.93
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	24.50	24.50	24.50	38.50

† Tentative.

Composite Prices

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)

	Finished Steel Base Price	Pig Iron	Scrap Steel
May 9, 1950	3.837¢ per lb.	$46.38 per gross ton	$32.08 per gross ton
One week ago	3.837¢ per lb.	46.38 per gross ton	31.08 per gross ton
One month ago	3.837¢ per lb.	46.38 per gross ton	28.83 per gross ton
One year ago	3.705¢ per lb.	45.91 per gross ton	22.75 per gross ton

	Finished Steel High	Finished Steel Low	Pig Iron High	Pig Iron Low	Scrap Steel High	Scrap Steel Low
1950	3.837¢ Jan. 3	3.837¢ Jan. 3	$46.38 Feb. 7	$45.88 Jan. 3	$32.08 May 9	$26.25 Jan. 3
1949	3.837¢ Dec. 27	3.3705¢ May 3	46.87 Jan. 18	45.88 Sept. 6	43.00 Jan. 4	19.33 June 28
1948	3.721¢ July 27	3.193¢ Jan. 1	46.91 Oct. 12	39.58 Jan. 6	43.16 July 27	39.75 Mar. 9
1947	3.193¢ July 29	2.848¢ Jan. 1	37.98 Dec. 30	30.14 Jan. 7	42.58 Oct. 28	29.50 May 20
1946	2.848¢ Dec. 31	2.464¢ Jan. 1	30.14 Dec. 10	25.37 Jan. 1	31.17 Dec. 24	19.17 Jan. 1
1945	2.464¢ May 29	2.396c Jan. 1	25.37 Oct. 23	23.61 Jan. 2	19.17 Jan. 2	18.92 May 22
1944	2.396¢	2.396¢	$23.61	$23.61	19.17 Jan. 11	15.76 Oct. 24
1943	2.396¢	2.396¢	23.61	23.61	$19.17	$19.17
1942	2.396¢	2.396¢	23.61	23.61	19.17	19.17
1941	2.396¢	2.396¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	$19.17 Apr. 10
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr. 9
1939	2.35367¢ Jan. 3	2.26689¢ May 16	22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May 16
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June 7
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4	23.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June 9
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June 8
1935	2.07642¢ Oct. 1	2.06492¢ Jan. 8	18.84 Nov. 5	17.83 May 14	13.42 Dec. 10	10.33 Apr. 29
1932	1.89196¢ July 5	1.83910¢ Mar. 1	14.81 Jan. 5	13.56 Dec. 6	8.50 Jan. 12	6.43 July 5
1929	2.31773¢ May 28	2.26498¢ Oct. 29	18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec. 8

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Based on averages for basic iron at Valley furnaces and foundry iron as Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Since 1898—for over fifty years—Alter Co. has served the scrap consumer as well as the scrap producing industry and scrap dealer.

Without obligation we will be pleased to counsel with you.

- Cast Iron
- Electric Furnace Grades
- Open Hearth
- Foundry Steel
- Sheet Iron for Baling
- Stainless Steel
- Non-Ferrous Metals

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STEEL PRICES

Smaller numbers in price boxes indicate producing companies. For main office locations, see key on facing page.
Base prices at producing points apply only to sizes and grades produced in these areas. Prices are in cents per lb unless otherwise noted. Extras apply.

	Pittsburgh	Chicago	Gary	Cleveland	Canton Massillon	Middletown	Youngstown	Bethlehem	Buffalo	Conshohocken	Johnstown	Sparrows Point	Granite City	Detroit
INGOTS Carbon forging, net ton	$50.00 1													$50.00 31
Alloy, net ton	$51.00 1.17													$51.00 31
BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton	$53.00 1	$53.00 1	$53.00 1				$57.00 13		$53.00 3	$58.00 26	$53.00 3			
Carbon forging billets, net ton	$63.00 1	$63.00 1.4	$63.00 1.8	$63.00 4			$63.00 25		$63.00 3.4	$68.00 26	$63.00 3			$63.00 31
Alloy, net ton	$66.00 1.17	$66.00 1.4	$66.00 1		$66.00 4.42		$66.00 13	$66.00 3	$66.00 3.4	$68.00 26	$66.00 3			$66.00 31
SHEET BARS							$57.00 13							
PIPE SKELP	3.15 1						3.15 1.4							
WIRE RODS	3.85 2.18	3.85 2.4.33	3.85 6	3.85 2			3.85 6				3.85 3	3.95 3		
SHEETS Hot-rolled (18 ga. & hvr.)	3.35 1.5.9.15	3.35 23	3.35 1.6.8	3.35 4.5			3.35 1.4.6.13		3.35 3	3.45 26		3.35 3		3.55 12
Cold-rolled	4.10[1.5] 7.9.15.63		4.10 1.6.8	4.10 4.15		4.10 7	4.10 4.6		4.10 3			4.10 3	4.30 22	4.30 12
Galvanized (10 gage)	4.40 1.9.15		4.40 1.8		4.40 4		4.65[6.4] 4.75[14]					4.40 3		
Enameling (12 gage)	4.40 1		4.40 1.8	4.40 4		4.40 7	4.40[6] 4.90[7.6]						4.60 22	4.70 12
Long ternes (10 gage)	4.80 9.15		4.80 1			4.80 7	4.80 64							
Hi Str. low alloy, h.r.	5.05 1.5.9	5.05 1	5.05 1.6.8	5.05 4.5			5.05 1.4.6.13		5.05 3	5.05 26		5.05 3		5.25 12
Hi str. low alloy, c.r.	6.20 1.5.9		6.20 1.6.8	6.20 4.5			6.20 4.6.13		6.20 3			6.20 3		6.40 12
Hi str. low alloy, galv.	6.75 1											6.75 3		
STRIP Hot-rolled	3.25 5.7.9.28	3.25 3.66	3.25 1.6.8	3.25 5			3.25 1.4.6.13		3.25 3	3.35 26		3.25 3		3.45 12.47
Cold-rolled	4.15 5.7.9.63	4.30 8.66	4.30 8	4.15 2.5		4.15 7	4.15 4.6.13.40.48.49		4.15 3			4.15 3		4.40[68.81] 4.35[12.47]
Hi str. low alloy, h.r.	4.95 9		4.95 1.6.8	4.95 5			4.95 1.4.6.13		4.95 3	4.95 26		4.95 3		5.15 12
Hi Str. low alloy, c.r.	6.20 9			6.20 2.5			6.20 4.6.13		6.20 3			6.20 3		6.40 12
TINPLATE† Cokes, 1.50-lb base box 1.25 lb. deduct 20¢	$7.50 1.5.9.15		$7.50 1.6.8				$7.50 4					$7.60 3	$7.70 22	
Electrolytic 0.25, 0.50, 0.75 lb box	Deduct $1.15, 90¢ and 65¢ respectively from 1.50-lb coke base box price													
BLACKPLATE, 29 gage Hollowware enameling	5.30 1.5.15		5.30 1.6				5.30 4					5.40 3	5.50 22	
BARS Carbon steel	3.45 1.5.9.17	3.45 1.4.23	3.45 1.6.8	3.45 4	3.45 4		3.45 1.4.6		3.45 3.4		3.45 3			3.65 12
Reinforcing‡	3.45 1.5	3.45 4	3.45 1.6.8	3.45 4			3.45 1.4.6		3.45 3.4		3.45 3	3.45 3		
Cold-finished	4.10[5] 4.15[2.4] 17.52.69.71	4.15[2] 23.69.70	4.15 4.73.74	4.15 2.61	4.15 4.31.82		4.15 6.40.57		4.15 70					4.35[12] 4.30[64]
Alloy, hot-rolled	3.95 1.17	3.95 1.4.23	3.95 1.6.8		3.95 4		3.95 1.6.25	3.95 3	3.95 3.4		3.95 3			4.25 12
Alloy, cold-drawn	4.90 2.17.52.69.71	4.90 2.23.69.70	4.90 4.73.74	4.90 2.61	4.90 4.42.82		4.90 6.25.57	4.90 3	4.90 3.70					5.05[14]
Hi str. low alloy, h.r.	5.20 1.5		5.20 1.6.8	5.20 4			5.20 1.6	5.20 3	5.20 3		5.20 3			5.40 12
PLATE Carbon steel	3.50 1.5	3.50 1	3.50 1.6.8	3.50 4			3.50 1.13		3.50 3	3.60 26	3.50 3	3.50 3		3.75 12
Floor Plates	4.55 1	4.55	4.55 3	4.55 5						4.55 26				
Alloy	4.40 1	4.40 1	4.40 1				4.40 13			4.40 26	4.40	4.40 3		
Hi Str. low alloy	5.35 1.5	5.35 1	5.35 1.3	5.35 4.5			5.35 6			5.35 6	5.35 3	5.35 3		5.60 12
SHAPES, Structural	3.40 1.5.9	3.40 1.23	3.40 1.6.8					3.45 3	3.45 3		3.45 3			
Hi Str. low alloy	5.15 1.5	5.15 1	5.15 1.6.8				5.15 6	5.15 3	5.15 3		5.15 3			
MANUFACTURERS' WIRE Bright	4.50 2.5.18	4.50[2] 4.12.33.34		4.50 2.77			4.50 6	Kokomo=4.60[3.6]			4.50 3	4.60 3	Duluth=4.50[4] Pueblo=4.75[1.4]	
PILING, Steel Sheet	4.20[1.9]	4.20 1							4.20 3					

Smaller numbers indicate producing companies. See key at right. Prices are in cents per lb unless otherwise noted. Extras apply.

IRON AGE

STEEL PRICES

Kansas City	Houston	Birmingham	WEST COAST Seattle, San Francisco, Los Angeles, Fontana		
					INGOTS Carbon forging, net ton
	$59.00 83				Alloy, net ton
		$53.00 11	F=$72.00[19]		BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton
	$71.00 83	$63.00 11	F=$82.00[19]	Geneva=$61.00[16]	Carbon forging billets, net ton
	$74.00 83		F=$85.00[19]		Alloy net ton
				Portsmouth=$55.00[20]	SHEET BARS
					PIPE SKELP
	4.25 83	3.85 11	SF=4.50[24] LA=4.65[24,62]	Portsmouth=3.85[20] Worcester=4.15[2]	WIRE RODS
		3.35 4.11	SF,LA=4.05[24] F=4.25[19]	Ashland=3.35[7] Niles=3.50[64]	SHEETS Hot-rolled (18 ga. & hvr.)
		4.10 11	SF=5.05[24] F=5.00[19]		Cold-rolled
		4.40 4.11	SF, LA=5.15[24]	Ashland=4.40[7] Kokomo=4.50[30]	Galvanized (10 gage)
					Enameling (12 gage)
					Long ternes (10 gage)
		5.05 11	F=6.74[19]		Hi Str. low alloy, h.r.
			F=7.05[19]		Hi Str. low alloy, c.r.
					Hi Str. low alloy, galv.
3.85 83	3.65 83	3.25 11	SF, LA=4.00[24,62] F=4.40[19], S=4.25[62]	Ashland=3.25[7] Atlanta=3.40[65]	STRIP Hot-rolled
			F=5.40[19] LA=5.50[27]	New Haven=4.65[2,68]	Cold-rolled
		4.95 11	F=6.64[19]		Hi Str. low alloy, h. r.
			F=6.95[19]		Hi Str. low alloy, c.r.
		7.60 11	SF=8.25[24]		TINPLATE Cokes, 1.50-lb base box 1.25 lb. deduct 20¢
Deduct $1.15, 90¢ and 65¢ respectively from 1.50-lb coke base box price					Electrolytic 0.25, 0.50, 0.75 lb box
					BLACKPLATE, 29 gage Hollowware enameling
4.05 83	3.85 83	3.45 4.11	SF, LA=4.15[24] LA=4.15[62]	Atlanta=3.60[65]	BARS Carbon steel
4.05 83	3.85 83	3.45 4.11	SF, S=4.20[62] F=4.10[19]	Atlanta=3.60[65]	Reinforcing‡
				Putnam, Newark=4.55[69]	Cold-finished
4.55 83	4.35 83		LA=5.00[62] F=4.95[19]		Alloy, hot-rolled
				Newark,[69] Worcester[2]=5.20 Hartford=5.20[4]	Alloy, cold-drawn
		5.20	F=6.25[19]		Hi Str. low alloy, h.r.
	3.90 83	3.50 4.11	F=4.10[19] S=4.40[62] Geneva=3.50[16]	Claymont=3.60[29] Coatesville=3.60[21] Harrisburg=3.50[35]	PLATE Carbon steel
				Harrisburg=4.55[35]	Floor plates.
			F=5.40[19]	Coatesville=4.50[21]	Alloy
		5.35 11	F=5.95[19]	Geneva=5.35[16]	Hi Str. low alloy
4.00 83	3.80 83	3.40 11	SF=3.95[62] LA=4.00[24,62]	Phoenixville=3.30[56] Geneva=3.40[16]	SHAPES, Structural
		5.15 11	F=4.00[19] S=4.05[62]	Fontana=5.75[19] Geneva=5.15[16]	Hi Str. low alloy
5.10 83	4.90 83	4.50 4.11	SF, LA=5.15[24,62]	Portsmouth=4.50[20] Worcester=4.80[2]	MANUFACTURERS' WIRE Bright

Notes: †Special coated mfg ternes deduct $1.15 from 1.50-lb coke base box price. Can-making quality blackplate, 55 to 128-lb, deduct $1.90 from 1.50-lb coke base box. ‡Straight lengths only from producer to fabricator.

KEY TO STEEL PRODUCERS

With Principle Offices

1 Carnegie-Illinois Steel Corp., Pittsburgh
2 American Steel & Wire Co., Cleveland
3 Bethlehem Steel Co., Bethlehem
4 Republic Steel Corp., Cleveland
5 Jones & Laughlin Steel Corp., Pittsburgh
6 Youngstown Sheet & Tube Co., Youngstown
7 Armco Steel Corp., Middletown, Ohio
8 Inland Steel Co., Chicago
9 Weirton Steel Co., Weirton, W. Va.
10 National Tube Co., Pittsburgh
11 Tennessee Coal, Iron & R. R. Co., Birmingham
12 Great Lakes Steel Corp., Detroit
13 Sharon Steel Corp., Sharon, Pa.
14 Colorado Fuel & Iron Corp., Denver
15 Wheeling Steel Corp., Wheeling, W. Va.
16 Geneva Steel Co., Salt Lake City
17 Crucible Steel Co. of America, New York
18 Pittsburgh Steel Co., Pittsburgh
19 Kaiser Co., Inc., Oakland, Calif.
20 Portsmouth Steel Corp., Portsmouth, Ohio
21 Lukens Steel Co., Coatesville, Pa.
22 Granite City Steel Co., Granite City, Ill.
23 Wisconsin Steel Co., South Chicago, Ill.
24 Columbia Steel Co., San Francisco
25 Copperweld Steel Co., Glassport, Pa.
26 Alan Wood Steel Co., Conshohocken, Pa.
27 Calif. Cold Rolled Steel Corp., Los Angeles
28 Allegheny Ludlum Steel Corp., Pittsburgh
29 Worth Steel Co., Claymont, Del.
30 Continental Steel Corp., Kokomo, Ind.
31 Rotary Electric Steel Co., Detroit
32 Laclede Steel Co., St. Louis
33 Northwestern Steel & Wire Co., Sterling, Ill.
34 Keystone Steel & Wire Co., Peoria, Ill.
35 Central Iron & Steel Co., Harrisburg, Pa.
36 Carpenter Steel Co., Reading, Pa.
37 Eastern Stainless Steel Corp., Baltimore
38 Washington Steel Corp., Washington, Pa.
39 Jessop Steel Co., Washington, Pa.
40 Blair Strip Steel Co., New Castle, Pa.
41 Superior Steel Corp., Carnegie, Pa.
42 Timken Steel & Tube Div., Canton, Ohio
43 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
44 Reeves Steel & Mfg. Co., Dover, Ohio
45 John A. Roebling's Sons Co., Trenton, N. J.
46 Simonds Saw & Steel Co., Fitchburg, Mass.
47 McLouth Steel Corp., Detroit
48 Cold Metal Products Co., Youngstown
49 Thomas Steel Co., Warren, Ohio
50 Wilson Steel & Wire Co., Chicago
51 Sweet's Steel Co., Williamsport, Pa.
52 Superior Drawn Steel Co., Monaca, Pa.
53 Tremont Nail Co., Wareham, Mass.
54 Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
55 Ingersoll Steel Div., Chicago
56 Phoenix Iron & Steel Co., Phoenixville, Pa.
57 Fitzsimmons Steel Co., Youngstown
58 Stanley Works, New Britain, Conn.
59 Universal-Cyclops Steel Corp., Bridgeville, Pa.
60 American Cladmetals Co., Carnegie, Pa.
61 Cuyahoga Steel & Wire Co., Cleveland
62 Bethlehem Pacific Coast Steel Corp., San Francisco
63 Follansbee Steel Corp., Pittsburgh
64 Niles Rolling Mill Co., Niles, Ohio
65 Atlantic Steel Co., Atlanta
66 Acme Steel Co., Chicago
67 Joslyn Mfg. & Supply Co., Chicago
68 Detroit Steel Corp., Detroit
69 Wyckoff Steel Co., Pittsburgh
70 Bliss & Laughlin, Inc., Harvey, Ill.
71 Columbia Steel & Shafting Co., Pittsburgh
72 Cumberland Steel Co., Cumberland, Md.
73 La Salle Steel Co., Chicago
74 Monarch Steel Co., Inc., Hammond, Ind.
75 Empire Steel Co., Mansfield, Ohio
76 Mahoning Valley Steel Co., Niles, Ohio
77 Oliver Iron & Steel Co., Pittsburgh
78 Pittsburgh Screw & Bolt Co., Pittsburgh
79 Standard Forging Corp., Chicago
80 Driver Harris Co., Harrison, N. J.
81 Detroit Tube & Steel Div., Detroit
82 Reliance Div., Eaton Mfg. Co., Massillon, Ohio
83 Sheffield Steel Corp., Kansas City
84 Plymouth Steel Co., Detroit

STAINLESS STEELS

Base prices, in cents per pound, f.o.b. producing point

Product	301	302	303	304	316	321	347	410	416	430
Ingots, rerolling	12.75	13.50	15.00	14.50	22.75	18.25	20.00	11.25	13.75	11.50
Slabs, billets, rerolling	17.00	18.25	20.25	19.25	30.25	24.50	26.75	15.00	18.50	15.25
Forg. discs, die blocks, rings	30.50	30.50	33.00	32.00	49.00	38.50	41.00	24.50	25.00	25.00
Billets, forging	24.25	24.25	26.25	25.50	39.00	29.00	32.75	19.50	20.00	20.00
Bars, wire, structurals	28.50	28.50	31.00	30.00	46.00	34.00	38.50	23.00	23.50	23.50
Plates	32.00	32.00	34.00	34.00	50.50	39.50	44.00	26.00	26.50-27.00	26.50
Sheets	37.50	37.50	39.50	39.50	53.00	45.50	50.00	33.00	33.50	35.50
Strip, hot-rolled	24.25	25.75	30.00	27.75	46.00	34.50	38.75	21.25	28.00	21.75
Strip, cold-rolled	30.50	33.00	36.50	35.00	55.00	44.50	48.50	27.00	33.50	27.50

STAINLESS STEEL PRODUCING POINTS—*Sheets:* Midland, Pa., 17; Brackenridge, Pa., 28; Butler, Pa., 7; McKeesport, Pa., 1; Washington, Pa., 38, 39; Baltimore, 37; Middletown, Ohio, 7; Massillon, Ohio, 4; Gary, 1; Bridgeville, Pa., 59; New Castle, Ind., 55; Ft. Wayne, Ind., 67; Lockport, N. Y., 46.

Strip: Midland, Pa., 17; Cleveland, 2; Carnegie, Pa., 41; McKeesport, Pa., 54; Reading, Pa., 36; Washington, Pa., 38; W. Leechburg, Pa., 28; Bridgeville, Pa., 59; Detroit, 47; Massillon, Canton, Ohio, 4; Middletown, Ohio, 7; Harrison, N. J., 80; Youngstown, 48; Lockport, N. Y., 46; New Britain, Conn., 58; Sharon, 13; Butler, Pa., 7.

Bars: Baltimore, 7; Duquesne, Pa., 1; Munhall, Pa., 1; Reading, Pa., 36; Titusville, Pa., 59; Washington, Pa., 39; McKeesport, Pa., 1, 54; Bridgeville, Pa., 59; Dunkirk, N. Y., 28; Massillon, Ohio, 4; Chicago, 1; Syracuse, N. Y., 17; Watervliet, N. Y., 28; Waukegan, Ill., 2; Lockport, N. Y., 46; Canton, Ohio, 42; Ft. Wayne, Ind., 67.

Wire: Waukegan, Ill., 2; Massillon, Ohio, 4; McKeesport, Pa., 54; Bridgeport, Conn., 44; Ft. Wayne, Ind., 67; Trenton, N. J., 45; Harrison, N. J., 80; Baltimore, 7; Dunkirk, 28.

Structurals: Baltimore, 7; Massillon, Ohio, 4; Chicago, 1, 67; Watervliet, N. Y., 28; Bridgeport, Conn., 44.

Plates: Brackenridge, Pa., 28; Butler, Pa., 7; Chicago, 1; Munhall, Pa., 1; Midland, Pa., 17; New Castle, Ind., 55; Lockport, N. Y., 46; Middletown, 7; Washington, Pa., 39; Cleveland, Massillon, 4.

Forged discs, die blocks, rings: Pittsburgh, 1, 17; Syracuse, 17; Ferndale, Mich., 28.

Forging billets: Midland, Pa., 17; Baltimore, 7; Washington, Pa., 39; McKeesport, 54; Massillon, Canton, Ohio, 4; Watervliet, 28; Pittsburgh, Chicago, 1.

ELECTRICAL SHEETS

22 gage, HR cut lengths, f.o.b. mill

	Cents per lb.
Armature	6.20
Electrical	6.70
Motor	*7.95
Dynamo	8.75
Transformer 72	9.30
Transformer 65	9.85
Transformer 58	10.55
Transformer 52	11.35

PRODUCING POINTS—Beech Bottom, W. Va., 18; Brackenridge, Pa., 28; Follansbee, W. Va., 63; Granite City, Ill., 22*; add 0.20¢; Indiana Harbor, Ind., 8; Mansfield, Ohio, 75; Niles, Ohio, 64, 76; Vandergrift, Pa., 1; Warren, Ohio, 4; Zanesville, Ohio, 7.

MERCHANT WIRE PRODUCTS

To dealers, f.o.b. mill	*Base Column*	*Pittsburg, Calif.*
Standard & coated nails*	10¢	12§§
Woven wire fence†	116	139
Fence posts, carloads††	116	...
Single loop bale ties	113	137
Galvanized barbed wire**	126	146
Twisted barbless wire	126	146

* Pgh., Chi., Duluth; Worcester, 6 columns higher; Houston, 8 columns higher; Kansas City, 12 columns higher. †15½ gage and heavier. ** On 80 rod spools, in carloads. †† Duluth, Joliet; Johnstown, 112.

	Base per 100 lb	*Pittsburg, Calif.*
Merch. wire, annealed‡	$5.35	$6.30
Merch. wire, galv.‡	5.60	6.55
Cut nails, carloads‡‡	6.75	...

‡ Add 30¢ at Worcester; 20¢ at Chicago; 10¢ at Sparrows Pt.

‡‡ Less 20¢ to jobbers.

§§ Torrance, 126.

PRODUCING POINTS — *Standard, Coated or galvanized nails, woven wire fence, bale ties, and barbed wire:* Alabama City, Ala., 4; Atlanta, 65; Aliquippa, Pa. (except bale ties), 5; Bartonville, Ill. (except bale ties), 34; Chicago, 4; Donora, Pa., 2; Duluth, 2; Fairfield, Ala., 11; Johnstown, Pa. (except bale ties), 3; Joliet, Ill., 2; Kokomo, Ind., 30; Minnequa, Colo., 14; Monessen, Pa. (except bale ties), 18; Pittsburg, Calif., 24; Portsmouth, Ohio, 20; Rankin, Pa. (except bale ties), 2; Sparrows Point (except woven fence), 3; Sterling, Ill., 33; San Francisco (except nails and woven fence), 14; Torrance, Calif. (nails only), 24; Worcester (nails only), 2; Houston (except bale ties), 83; Kansas City, 83.

Fence posts: Duluth, 2; Johnstown, Pa., 3; Joliet, Ill., 2; Minnequa, Colo., 14; Moline, Ill., 4; Williamsport, Pa., 51.

Cut nails: Wheeling, W. Va., 15; Conshohocken, Pa., 26; Warehame, Mass., 53.

RAILS, TRACK SUPPLIES

F.o.b. mill

	Base Price cents per lb
Standard rails, 100 lb and heavier, No. 1 quality, per 100 lb	$3.40
Joint bars, per 100 lb	4.40
Light rails, per 100 lb	3.75
Track spikes†	5.60
Axles	5.25
Screw spikes	8.60
Tie plates	4.20
Pittsburg, Torr., Calif.; Seattle	4.35
Track bolts, untreated**	8.85
Track bolts, heat treated, to railroads**	9.10

** Minnequa, deduct 25¢. † Kansas City, 5.85¢.

PRODUCING POINTS—*Standard rails:* Bessemer, Pa., 1; Ensley, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Minnequa, Colo., 14; Steelton, 3.

Light rails: All the above except Indiana Harbor and Steelton, plus Fairfield, Ala., 11; Johnstown, 3; Minnequa, 14.

Joint bars: Bessemer, Pa., 1; Fairfield, Ala., 11; Indiana Harbor, Ind., 8; Joliet, Ill., 1; Lackawanna, N. Y., 3; Steelton, Pa., 3; Minnequa, Colo., 14.

Track spikes: Fairfield, Ala., 11; Indiana Harbor, Ind., 6, 8; Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 5; Chicago, 4; Struthers, 6; Youngstown, 4.

Track bolts: Fairfield, Ala., 11; Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 77, 78.

Axles: Fairfield, Ala., 11; Gary, 1; Indiana Harbor, Ind., 79; Johnstown, Pa., 3; McKees Rocks, Pa., 1.

Tie plates: Fairfield, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Pittsburg, Calif., 24; Pittsburgh, 4; Seattle, 62; Steelton, Pa., 3; Torrance, Calif., 24; Minnequa, Colo., 14.

Numbers after producing points correspond to steel producers. See key on Steel Price page.

PIPE AND TUBING

Base discounts, f.o.b. mills
Base price, about $200.00 per net ton

Standard, T & C

Steel, Buttweld*	*Black*	*Galv*
½-in.	40½ to 38½	24 to 22
¾-in.	43½ to 41½	28 to 26
1-in.	46 to 44	31 to 29
1¼-in.	46½ to 44½	31½ to 29½
1½-in.	47 to 45	32 to 30
2-in.	47½ to 45½	32½ to 30½
2½ to 3-in.	48 to 46	33 to 31
Steel, lapweld		
2-in.	38	22½
2½ to 3-in.	42	26½
3½ to 6-in.	43 to 40	27½ to 24½
Steel, seamless		
2-in.	36	20½
2½ to 3-in.	39	23½
3½ to 6-in.	41	25½
Wrought Iron, buttweld		
½-in.	+26½	+53
¾-in.	+16½	+42
1 & 1¼-in.	+10½	+33
1½-in.	+ 4½	+29½
2-in.	+ 4	+29
Wrought Iron, lapweld		
2-in.	+13½	+37
2½ to 3½-in.	+11	+32½
4-in.	+ 6	+26½
4½ to 8-in.	+ 8	+28
9 to 12-in.	+18	+37½

Extra Strong, Plain Ends

Steel, buttweld		
½-in.	39½ to 37½	24½ to 22½
¾-in.	43½ to 41½	28½ to 26½
1-in.	45½ to 43½	31½ to 29½
1¼-in.	46 to 44	32 to 30
1½-in.	46½ to 44½	32½ to 30½
2-in.	47 to 45	33 to 32
2½ to 3-in.	47½ to 45½	33½ to 31½
Steel, lapweld		
2-in.	37	22½
2½ to 3-in.	42	27½
3½ to 6-in.	44½ to 41½	30 to 27
Steel, seamless		
2-in.	35	20½
2½ to 3-in.	38	24½
3½ to 6-in.	42½	28
Wrought Iron, buttweld		
½-in.	+22	+47
¾-in.	+15½	+40
1 to 2-in.	+ 5½	+29
Wrought Iron, lapweld		
2-in.	+10½	+33½
2½ to 4-in.	+ 1	+22
4½ to 6-in.	+ 5	+26½
7 & 8-in.	list	+21½
9 to 12-in.	+11½	+29½

For threads only, buttweld, lapweld and seamless pipe, one point higher discount (lower price) applies. For plain ends, buttweld, lapweld and seamless pipe 2-in. and smaller, three points higher discount (lower price) applies, while for lapweld and seamless 3½-in. and larger four points higher discount (lower price) applies. On buttweld and lapweld steel pipe, jobbers are granted a discount of 5 pct. *Fontana, Calif., deduct 11 points from figures in left columns.

BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Prices per 100 ft at mill in carload lots, cut lengths 10 to 24 ft inclusive.

OD in.	gage BWG	Seamless H.R.	Seamless C.R.	Electric H.R.	Weld C.D.
2	13	$20.61	$24.24	$19.99	$23.51
2½	12	27.71	32.58	26.88	31.69
3	12	30.82	36.27	29.90	35.18
3½	11	38.52	45.38	37.36	43.99
4	10	47.82	56.25	46.39	54.56

Prices continued on next page

WAREHOUSE PRICES

Base prices, f.o.b. warehouse, dollars per 100 lb. (Metropolitan area delivery, add 20¢ to base price except Birmingham, Cincinnati, New Orleans, St. Paul (*), add 15¢; Philadelphia, add 25¢).

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140 Ann.
Baltimore	5.05	6.24–6.44[1]	6.46–6.46[2]	5.59–5.59[11]	....	5.20–5.84[11]	5.49	5.49–5.49[11]	6.19	9.69	9.99	11.12	11.49
Birmingham*	5.05[10]	5.80	6.15[7]	5.10[10]	....	5.20	5.05	5.00[10]	6.73	....	....	....	....
Boston	5.73	6.48[10]–6.85	6.79–7.24[21]	5.78	6.90–6.95	5.88	5.55	5.60	6.30–6.58	9.70–9.97	8.50–10.37	11.15	11.45
Buffalo	5.05	5.80	6.80	5.41	7.27	5.45	5.15	5.05	5.75	9.60	9.90	11.05	11.35
Chicago	5.05	5.80	6.70	5.10	6.80	5.20	5.05	5.00	5.65	9.25	9.55	10.70	11.00
Cincinnati*	5.32–5.97	5.80–6.24	6.29–6.39	5.49	....	5.59–5.74	5.44–5.59	5.39–5.54	6.10–6.25	9.60–9.81	9.90–10.11	11.05–11.26	11.35–11.56
Cleveland	5.05	5.80	6.95	5.24	6.35	5.32	5.17	5.12	5.75	9.36	9.66	10.81	11.11
Detroit	5.33	6.08	7.09	5.49	6.27–6.56	5.59	5.44	5.39	6.03	9.56	9.86	11.01	11.31
Houston	5.75	....	....	6.10	....	6.00	5.95	6.10	7.80	10.35–10.45	10.50–10.60	11.50	11.95–12.10
Indianapolis	....	....	....	....	7.36	....	....	....	....	....	....	....	....
Kansas City	5.65	6.40	7.30	5.70	6.95	5.80	5.65	5.60	6.35	9.85	10.15	11.30	11.60
Los Angeles*	5.80	7.00	7.50[2]	5.85	6.35[16]	5.80	5.70	5.80	7.55	10.05	10.20	11.70	12.10
Memphis	5.93	6.68	....	5.98	6.80	6.08	5.93	5.68	....	....	....	....	....
Milwaukee	5.19	5.94	6.84	5.24	6.32	5.34	5.19	5.14	5.89	9.39	9.69	10.84	11.14
New Orleans*	5.50[1]	6.85[1]	....	5.55[1]	6.90[1]	5.65	5.55[1]	5.55[1]	6.75	....	....	....	....
New York	5.55–5.65	6.54–6.64[1]	6.90–7.05[2]	5.84	6.76[5]	5.70	5.45	5.60	6.44	9.60	9.90	11.05	11.35
Norfolk	6.10	7.00	....	6.30	....	6.15	6.20	6.15	7.20	....	....	....	....
Omaha	....	....	....	....	....	....	....	....	....	....	....	....	....
Philadelphia*	5.30	6.20	6.70[2]	5.65	6.29	5.45	5.25	5.50	6.21	9.35	9.65	10.80	11.10
Pittsburgh	5.05	5.80	6.45	5.20	6.00	5.15	5.05	5.00	5.75	9.25	9.55	10.70	11.00
Portland	6.60–7.10[1]	8.40[2]	8.20[2]	6.65[9]	....	6.40[9]	6.50	6.45–6.45[9]	8.60[14]	12.00[18]	11.80[18]	....	....
Salt Lake City	5.85	6.70	8.75	7.45	8.75	6.10[3]	5.90	7.35[8]	8.75	....	....	....	....
San Francisco	6.25[11]	7.60[2]	7.50[2]	6.75[11]	7.85[16]	6.15[11]	6.00[11]	6.15[11]	7.55	10.05	10.20	11.70	12.10
Seattle	6.60[4]	8.15[2]	8.20[2]–8.35[2]	6.85[4]	....	6.35[4]	6.20[4]	6.35[4]	8.50[14]	....	11.60[18]	....	13.60[18]
St. Louis	5.38	6.13	7.05	5.43	6.68–7.54	5.53	5.38	5.33–5.35	6.08	9.58	9.88	11.03	11.33
St. Paul	5.61	6.36	7.26	5.66	6.16–6.82	5.78	5.61	5.56	6.31	9.81	10.11	11.26	11.56

BASE QUANTITIES: (*Standard unless otherwise keyed on prices.*) Hot-rolled sheets and strip, hot rolled bars and bar shapes, structural shapes, plate, galvanized sheets and cold-rolled sheets: 2000 to 9999 lb. Cold-finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb.

All HR products may be combined to determine quantity bracket. All galvanized sheets may be combined to determine quantity bracket. CR sheets may not be combined with each other or with galv. sheets to determine quantity bracket.

Exceptions:
(1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 to 5999 lb; (6) 1000 lb and over; (7) 500 to 1499 lb; (8) 400 lb and over; (9) 400 to 9999 lb; (10) 500 to 9999 lb; (11) 400 to 3999 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1000 to 9999 lb; (16) 6000 lb and over; (17) up to 1999 lb; (18) 1000 to 4999 lb; (19) 1500 to 3499 lb; (20) CR sheets may be combined for quantity; (21) 3 to 24 bundles.

PIG IRON PRICES

Dollars per gross ton. Delivered prices do not include 3 pct tax on freight.

PRODUCING POINT PRICES

Producing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	48.00	48.50	49.00	49.50	.....
Birmingham	41.88	42.38	.....	.....	.....
Buffalo	46.00	46.50	47.00	.....	.....
Chicago	46.00	46.50	46.50	47.00	.....
Cleveland	46.00	46.50	46.50	47.00	51.00
Duluth	46.00	46.50	46.50	47.00	.....
Erie	46.00	46.50	46.50	47.00	.....
Everett	.....	50.50	51.00	.....	.....
Granite City	47.90	48.40	48.90	.....	.....
Ironton, Utah	46.00	46.50	.....	.....	.....
Pittsburgh	46.00	46.50	46.50	47.00	.....
Geneva, Utah	46.00	46.50	.....	.....	.....
Sharpsville	46.00	46.50	46.50	47.00	.....
Steelton	48.00	48.50	49.00	49.50	54.00
Struthers, Ohio	46.00	.....	.....	.....	.....
Swedeland	48.00	48.50	49.00	49.50	.....
Toledo	46.00	46.50	46.50	47.00	.....
Troy, N. Y.	48.00	48.50	49.00	.....	54.00
Youngstown	46.00	46.50	46.50	47.00	.....

DELIVERED PRICES (BASE GRADES)

Consuming Point	Producing Point	Rail Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Boston	Everett	$0.50 Arb.	.....	50.50	51.00	.....	.....
Boston	Steelton	6.90	.....	.....	.....	.....	60.90
Brooklyn	Bethlehem	4.29	.....	52.79	53.29	53.79	.....
Cincinnati	Birmingham	6.70	48.58	49.08	.....	.....	.....
Jersey City	Bethlehem	2.63	.....	51.13	51.63	52.13	.....
Los Angeles	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
Mansfield	Cleveland-Toledo	3.33	49.33	49.83	49.83	50.33	54.33
Philadelphia	Bethlehem	2.39	50.39	50.89	51.39	51.89	.....
Philadelphia	Swedeland	1.44	49.44	49.94	50.44	50.94	.....
Philadelphia	Steelton	3.09	.....	.....	.....	.....	57.09
Rochester	Buffalo	2.63	48.63	49.13	49.63	.....	.....
San Francisco	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
Seattle	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
St. Louis	Granite City	0.75 Arb.	48.65	49.15	49.65	.....	.....
Syracuse	Buffalo	3.58	49.58	50.08	50.58	.....	.....

Producing point prices are subject to switching charges; silicon differential (not to exceed 50c per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct for foundry iron); phosphorus differentials, a reduction of 38c per ton for phosphorus content of 0.70 pct and over manganese differentials, a charge not to exceed 50c per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.01 to 6.50 pct C/L per g.t., f.o.b. Jackson, Ohio—$57.00; f.o.b. Buffalo, $58.25. Add $1.00 per ton for each additional 0.50 pct Si up to 17 pct. Add 50c per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for 0.75 pct or more P. Bessemer ferrosilicon prices are $1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorus $60.00 per gross ton, f.o.b. Lyle, Tenn. Delivered Chicago, $68.56. High phosphorus charcoal pig iron is not being produced.

• There are two ways to make a product

You can make a product to sell for a price. Or you can *tailor-make* a product to do a job.

We like to make products that *fit*. We think any product that doesn't fit is false economy at any price.

That's why, in the metal cleaners we make, there are characteristics that are tailor-made for the specific job they are to do.

What's the result? You get a product that does *more for you* per dollar than any product you might buy on a price basis.

WYANDOTTE CHEMICALS CORPORATION
Wyandotte, Michigan
Service Representatives in 88 Cities

Wyandotte
REG. U. S. PAT. OFF.

BOLTS, NUTS, RIVETS, SET SCREWS

Consumer Prices

(Bolts and nuts, f.o.b. mill Pittsburgh, Cleveland, Birmingham or Chicago)
Base discount

Machine and Carriage Bolts

	Pct Off List Less Case	C.
½ in. & smaller x 6 in. & shorter	27	38
9/16 & ⅝ in. x 6 in. & shorter	29	40
¾ in. & larger x 6 in. shorter	26	37
All diam, longer than 6 in.	22	34
Lag, all diam over 6 in. & longer	28	39
Lag, all diam x 6 in. & shorter	30	41
Plow bolts	40	—

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller	25 37
9/16 to ⅝ in.	23 35
¾ to 1½ in. inclusive	23 35
1⅝ in. and larger	16 29

Semifinished Hexagon Nuts

(Less case lots)

	Pct Off List Reg	Hvy	Lt
½ in. and smaller	41	35	41
9/16 to ⅝ in.	36	30	36
¾ to 1½ in.	31	27	33
1⅝ in. and larger	21	17	..

In full case lots, 15 pct additional discount.

Stove Bolts

	Pct Off List
Packaged, steel, plain finish	63
Packaged, plated finish	50
Bulk, plain finish**	69*

* Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

** Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Large Rivets

(½ in. and larger)
Base per 100 lb

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham, Lebanon, Pa.	$7.25

Small Rivets

(7/16 in. and smaller)
Pct Off List

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	43

Cap and Set Screws

(In bulk)	Pct Off List
Hexagon head cap screws, coarse or fine thread, ¼ in. thru ⅝ in. x 6 in., SAE 1020, bright	60
¼ in. through ⅝ in. x 6 in. and shorter high C heat treated	54
Milled studs	23
Flat head cap screws, listed sizes	24
Fillister head cap, listed sizes	42
Set screws, sq head, cup point, 1 in. diam and smaller x 6 in. and shorter	59

C-R SPRING STEEL

Base per pound f.o.b. mill

0.26 to 0.40 carbon	4.15¢
0.41 to 0.60 carbon	5.95¢
0.61 to 0.80 carbon	6.55¢
0.81 to 1.05 carbon	8.50¢
1.06 to 1.35 carbon	10.80¢

Worcester, add 0.30¢.

LAKE SUPERIOR ORES

(51.50% Fe; natural content, delivered lower lake ports)

	Per gross ton
Old range, bessemer	$8.10
Old range, nonbessemer	7.95
Mesabi, bessemer	7.85
Mesabi, nonbessemer	7.70
High phosphorus	7.70

After Jan. 25, 1950, increases or decreases in Upper Lake rail freight, dock handling charges and taxes are for buyers' account.

ELECTRODES

Cents per lb., f.o.b. plant, threaded electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb
	GRAPHITE	
17, 18, 20	60, 72	16.00¢
8 to 16	48, 60, 72	16.50¢
7	48, 60	17.75¢
6	48, 60	19.00¢
4, 5	40	19.50¢
3	40	20.50¢
2½	24, 30	21.00¢
2	24, 30	23.00¢
	CARBON	
40	100, 110	7.50¢
35	65, 110	7.50¢
30	65, 84, 110	7.50¢
24	72 to 104	7.50¢
20	84, 90	7.50¢
17	60, 72	7.50¢
14	60, 72	8.00¢
10, 12	60	8.25¢
8	60	8.50¢

CLAD STEEL

Base prices, cents per pound, f.o.b. mill

Stainless-carbon	Plate	Sheet
No. 304, 20 pct, Coatesville, Pa. (21)	*26.50	
Washgtn, Pa. (39)	*26.50	
Claymont, Del. (29)	*26.50	
Conshohocken, Pa. (26)		*22.50
New Castle, Ind. (55)	*26.50	*24.00
Nickel-carbon 10 pct, Coatesville (26)	27.50	
Inconel-carbon 10 pct, Coatesville (21)	36.00	
Monel-carbon 10 pct, Coatesville (21)	29.00	
No. 302 Stainless-copper-stainless, Carnegie, Pa. (60)		75.00
Aluminized steel sheets, hot dip, Butler, Pa. (7)		7.75

*Includes annealing and pickling, or sandblasting.

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	$1.00
18	4	1	—	5	$1.565
18	4	2	—	—	$1.13
1.5	4	1.5	8	—	71.5¢
6	4	2	6	—	76.5¢

High-carbon-chromium	57.5¢
Oil hardened manganese	32¢
Special carbon	29.5¢
Extra carbon	24.5¢
Regular carbon	21¢

Warehouse prices on and east of Mississippi are 2½¢ per lb higher. West of Mississippi, 4½¢ higher.

COKE

	Net Ton
Furnace, beehive (f.o.b. oven) Connellsville, Pa.	$14.00 to $14.50
Foundry, beehive (f.o.b. oven) Connellsville, Pa.	$16.00 to $16.50
Foundry, oven coke	
Buffalo, del'd	$24.00
Chicago, f.o.b.	21.00
Detroit, f.o.b.	20.40
New England, del'd	23.40
Seaboard, N. J., f.o.b.	22.00
Philadelphia, f.o.b.	21.25
Swedeland, Pa., f.o.b.	21.20
Painesville, Ohio, f.o.b.	21.90
Erie, del'd	$21.04 to 21.25
Cleveland, del'd	22.62
Cincinnati, del'd	22.71
St. Paul, f.o.b.	21.00
St. Louis, del'd	21.60
Birmingham, del'd	20.20

FLUORSPAR

Washed gravel fluorspar, f.o.b. cars, Rosiclare, Ill. Base price, per ton net; Effective CaF, content:

70% or more	$37.00
60% or less	34.00

Prices Continued on Next Page

Good News —

NOW, all Johnson XLO Music Spring Wire is made from imported, improved Swedish rod. Johnson researchers plus the resources of Swedish steel-makers have developed an electric furnace steel, with closely controlled analysis, which is being used exclusively in Johnson Music Spring Wire. The result—more uniformity and added fatigue.

This quality advance is in line with the Johnson policy of giving something better whenever possible.

Ample stockpiles warrant a continuous supply.

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STEEL AND WIRE COMPANY, INC

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For Sodium Hydride Descaling

USE DU PONT "NATIONAL"

ANHYDROUS AMMONIA

MINIMUM 99.99%

— AT NO ADDITIONAL COST

If part of your metal-treating operations includes sodium hydride descaling, consider dissociated anhydrous ammonia as an economical source of hydrogen. Du Pont "National" Anhydrous Ammonia is pure by the highest standards, yet it costs no more. It is dry, too; the moisture content is less than fifty parts per million. Distributors and stock points are spaced across the country . . . to assure you of quick delivery whether you order one cylinder or fifty.

DO YOU KNOW THESE OTHER DU PONT CHEMICALS FOR METAL TREATING?

HYDROXYACETIC ACID 70% — For bright dipping of copper, electro-polishing of stainless steel and electroless plating of nickel.

METHANOL—Source of hydrogen and carbon monoxide as a treating atmosphere, and for cleaning of metal parts during fabrication.

Product sheets on these and other chemicals are available. Please write on your letterhead to: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Wilmington 98, Delaware.

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POLYCHEMICALS DEPARTMENT

350 Fifth Avenue, New York 1, N. Y. 7 S. Dearborn Street, Chicago 3, Ill.
818 Olive Street, St. Louis 1, Missouri

REFRACTORIES (*F.o.b. works*)

Fire Clay Brick *Carloads, Per 1000*

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5)	$86.00
No. 1 Ohio	80.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	80.00
No. 2 Ohio	72.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)	14.00

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$86.00
Childs, Pa.	90.00
Hays, Pa.	91.00
Chicago District	95.00
Western Utah and Calif.	101.00
Super Duty, Hays, Pa., Athens, Tex., Chicago	106.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	15.00
Silica cement, net ton, bulk, Hays, Pa.,	17.00
Silica cement, net ton, bulk, Ensley, Ala.	16.00
Silica cement, net ton, bulk, Chicago District	16.00
Silica cement, net ton, bulk, Utah and Calif.	22.50

Chrome Brick *Per Net Ton*

Standard chemically bonded, Balt., Chester	$69.00

Magnesite Brick

Standard, Baltimore	$91.00
Chemically bonded, Baltimore	80.00

Grain Magnesite *St. ¾-in. grain*

Domestic, f.o.b. Baltimore, in bulk fines removed	$56.00 to $57.00
Domestic, f.o.b. Chewelah, Wash., in bulk	33.00
in sacks	38.00

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢	$12.25

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.i.f. New York, ocean bags	7.4¢ to 9.0¢
Canadian sponge iron, del'd, in East	10.00¢
Domestic sponge iron, 98+% Fe, carload lots	9.0¢ to 15.0¢
Electrolytic iron, annealed, 99.5+% Fe	31.5¢ to 39.5¢
Electrolytic iron unannealed, minus 325 mesh, 99+% Fe	48.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe	70.0¢ to $1.35
Aluminum	31.50¢
Brass, 10 ton lots	23.50¢ to 27.25¢
Copper, electrolytic	27.75¢
Copper, reduced	27.00¢
Cadmium, 100-199 lb	$2.95
Chromium, electrolytic, 99% min., and quantity	$3.50
Lead	17.00¢
Manganese	52.00¢
Molybdenum, 99%	$2.65
Nickel, unannealed	56.00¢ to 66.00¢
Nickel, annealed	72.00¢
Nickel, spherical, unannealed	69.00¢
Silicon	34.00¢
Solder powder	8.5¢ plus metal values
Stainless steel, 302	75.00¢
Tin	85.75¢
Tungsten, 99%	$2.90
Zinc, 10 ton lots	15.75¢ to 18.50¢

CAST IRON WATER PIPE

Per net ton

6 to 24-in., del'd Chicago	$91.80 to $95.30
6 to 24-in. del'd N. Y.	91.00 to 92.00
6 to 24-in., Birmingham	78.00 to 82.50
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less	$108.50 to $113.00

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

Continued

FERROALLOYS

Ferromanganese

78-82% Mn. maximum contract base price, gross ton, lump size.

F.o.b. Birmingham	$174
F.o.b. Niagara Falls, Alloy, W. Va., Welland, Ont.	$172
F.o.b. Johnstown, Pa.	$174
F.o.b. Sheridan, Pa.	$172
F.o.b. Etna, Clairton, Pa.	$175

$2.00 for each 1% above 82% Mn, penalty, $2.15 for each 1% below 78%.

Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk	10.45
Ton lots	12.05

Spiegeleisen

Contract prices gross ton, lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Palmerton, Pa.	$64.00	$65.00
Pgh. or Chicago	65.00	66.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.

Carload, packed	35.5
Ton lots	37.0

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	28
Ton lots	30
Less ton lots	32

Medium Carbon Manganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb. of contained Mn ..... 13.15¢

Low-Carbon Manganese

Contract price, cents per pound Mn contained, lump size, delivered.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	25.25	27.10	28.30
0.10% max. C	24.75	26.60	27.80
0.15% max. C	24.25	26.10	27.30
0.30% max. C	23.75	25.60	26.80
0.50% max. C	23.25	25.10	26.30
0.75% max. C, 7.00% max. Si	20.25	22.10	23.30

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.

Carload bulk	8.95
Ton lots	10.60
Briquet, contract basis carlots, bulk delivered, per lb of briquet	10.30
Ton lots	11.90

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $77.00 gross ton, freight allowed to normal trade area; Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $73.50. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

96% Si, 2% Fe	20.70
97% Si, 1% Fe	21.10

Silicon Briquets

Contract price, cents per pound of briquet, bulk, delivered, 40% Si, 1 lb Si briquets.

Carload, bulk	6.30
Ton lots	7.90

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.

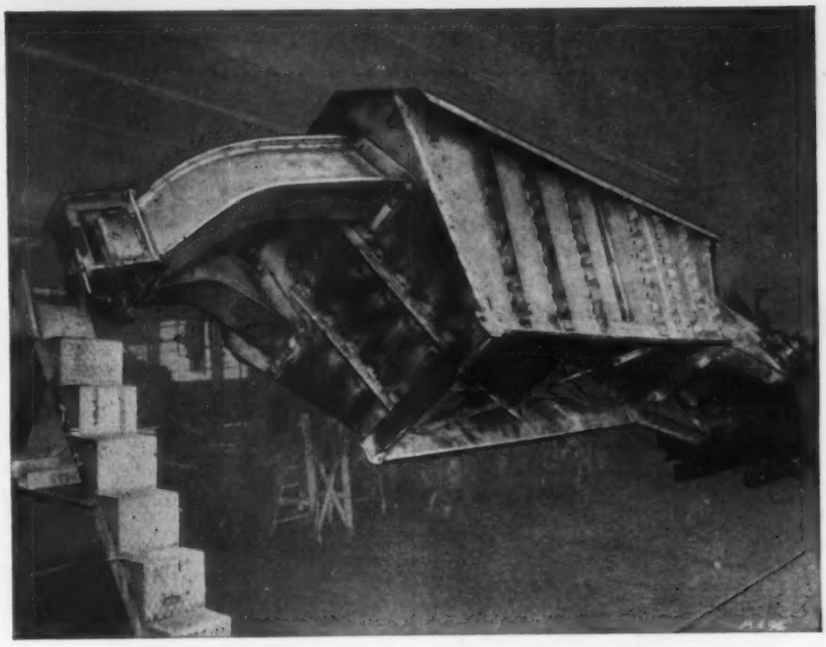
25% Si	17.00	75% Si	13.50
50% Si	11.30	85% Si	14.65
90-95% Si			16.50

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Prices Continued on Next Page



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★ *Economy*

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Norelco CONTACT WELDING ELECTRODES

• With this entirely *new type* of rod, welding speeds are increased an average of 45%. Welding is made much easier by touch-welding in all positions; and quality uniformly improved through less distortion, undercutting, and better control.

Available in two types: Contact 18 (in conformance with AWS E6013 class) for fast all-position general-purpose welding, and Contact 20 (AWS 6020 class) for extremely fast production welding in horizontal and downhand positions. Both AC or DC.

Norelco CONTACT WELDING ELECTRODES

*For full details of actual production results, technical information and prices write:

NORTH AMERICAN PHILIPS COMPANY, INC.
100 East 42nd Street, Dept. WA-5
New York 17, N.Y.

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered. (65-72% Cr, 2% max Si.)

0.06% C	28.75	0.20% C	27.75
0.10% C	28.25	0.50% C	27.50
0.15% C	28.00	1.00% C	27.25
2.00% C			27.00
65-69% Cr, 4-9% C			20.50
62-66% Cr, 4-6% C, 6-9% Si.			21.35

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

S. M. Ferrochrome

Contract price, cents per pound chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carloads	27.75
Ton lots	30.05
Less ton lots	31.85

Chromium Metal

Contract prices, per lb chromium contained packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

0.20% max. C	$1.09
0.50% max. C	1.05
9.00 min. C	1.04

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 20.50¢ per lb of contained Cr plus 11.30¢ per lb of contained Si.

Bulk 1-in. x down, 20.65¢ per lb contained Cr plus 11.50¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, lump, delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe.

Carloads	17.90
Ton lots	21.00
Less ton lots	22.50

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	19.25
Ton lots	21.55
Less ton lots	22.55

CMSZ

Contract price, cents per pound of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50.56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots	19.75
Less ton lots	21.00

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	15.75¢
Less ton lots	17.00¢

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	17.00¢
Ton lots to carload packed	18.00¢
Less ton lots	19.50¢

SMZ

Contract price, cents per pound of alloy, delivered. 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.25
Less ton lots	18.50

Other Ferroalloys

Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.

Carload	7.65¢
Ton lots	9.05¢

Calcium molybdate, 45-40%, f.o.b. Langeloth, Pa., per pound contained Mo — 94¢

Ferrocolumbium, 50-60%, 2 in x D, contract basis, delivered, per pound contained Cb.

Ton lots	$3.50
Less ton lots	3.55

Ferro-Tantalum-columbium, 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta — $2.67

Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo — $1.13

Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton — $65.00

10 tons to less carload — 75.00

Ferrotitanium, 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti — $1.23

Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti — $1.40

Less ton lots — 1.45

Ferrotitanium, 15 to 19%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton — $160.00

Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered — $2.25

Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained V.

Openhearth	$2.90
Crucible	3.00
High speed steel (Primos)	3.10

Molybdic oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa. — 95¢

bags, f.o.b. Washington, Pa., Langeloth, Pa. — 94¢

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound

Carload, bulk, lump	11.00¢
Ton lots, bulk, lump	11.50¢
Less ton lots, lump	12.25¢

Vanadium pentoxide, 88-92% V_2O_5 contract basis, per pound contained V_2O_5 — $1.20

Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.

Ton lots	21.00¢

Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.

Carload, bulk	6.60¢

Boron Agents

Contract prices, per lb of alloy, del.

Borosil, f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B — $4.25

Bortam, f.o.b. Niagara Falls

Ton lots, per pound	45¢
Less ton lots, per pound	50¢

Carbortam, f.o.b. Suspension Bridge, N. Y.; freight allowed, Ti 15-18%, B 1.00-1.50%, Si 2.5-3.0%, Al 1.0-2.0%.

Ton lots, per pound	8.625¢

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots — $1.20

F.o.b. Wash., Pa.; 100 lb, up

10 to 14% B	.75
14 to 19% B	1.20
19% min. B	1.50

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.

No. 1	92¢
No. 6	63¢
No. 79	45¢

Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, delivered.

Ton lots	$1.67
Less ton lots	1.79

Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.

Less ton lots	$1.80

Silcaz, contract basis, delivered.

Ton lots	45.00¢

Union Pension Drive Poses Problems, Cautions Commerce Man

Washington—Caution should be the byword of the employer about to sign the dotted line on a pension plan pushed by the union, advises Richard K. Lane, chairman of the Chamber of Commerce Labor Relations Committee.

In a foreword to a pamphlet reporting on the scope of non-contributory pension plans, Mr. Lane warns that "many serious problems have been created for employers" by union welfare activities. The pamphlet states that more than 1 million new employees were covered by collectively-bargained pension plans during 1949. One of eight contracts being signed with unions hold pension clauses with the trend strong to non-contributory plans providing $100 per month.

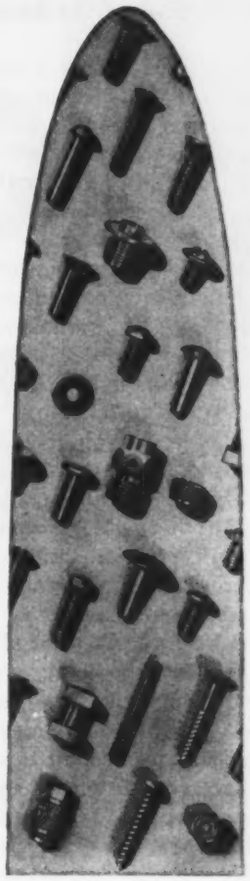
Unions Ask Equal Voice

Mr. Lane says that a workable welfare plan will add to good labor relations but a carelessly-adopted, unworkable plan may crimp a company's profit-making potential and lessen job security.

Mr. Lane comments that unions are now demanding an equal voice in plan administration, normal as opposed to compulsory retirement ages, and supplemental benefits for workers who died, are disabled, or who were dropped from employment before attaining retirement age.

Acme Steel Sees Profits Rising

Chicago—Acme Steel Co. looks forward to "increased production, sales, and profits" in 1950, according to its annual report to stockholders. Current sales are running at a rate equal to that of 1948, the report said, and are higher than the average monthly sales of 1949. The company's sales in 1949 were $50.3 million as compared with $60.3 million a year earlier. The decline was attributed to the effects of the 1949 steel strike.



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Sales Lower Than in 1948, Reports Canadian Nickel Firm

Toronto—Total sales of nickel to U. S. and Canadian consumers in 1949 were 209,292,257 lb, about 13 pct lower than 1948 sales, it was reported by Robert C. Stanley, chairman, International Nickel Co. of Canada, Ltd., at the annual meeting held here recently. But sales in 1949 exceeded the average of prewar years from 1936 to 1939 by about 70 pct.

European Shipments Increase

"Consumption of nickel in Great Britain," Mr. Stanley states, "remained at about the same level as in 1948. Use by the steel industry increased by 13 pct which was offset by lower amounts for coinage and anodes. Compared with the prewar period the consumption in Great Britain has increased more than 35 pct.

"Deliveries to continental Europe were about double those of 1948 despite currency difficulties. However, the disruptions caused by the war continue adversely to affect the consumption of nickel in Europe and have limited deliveries in these markets to 40 pct of the prewar average. The last year has again seen Germany as an important consuming market.

"In the U. S., Canada and Great Britain, which take about 85 pct of the company's nickel production, steel mills bought about a third of the total, including substantial amounts for stainless steels," Mr. Stanley said. "Deliveries of high nickel content rolling mill products and nickel for electroplating, together account for about 40 pct.

"Cobalt recovery at Port Colborne, Ont., is being increased," Mr. Stanley said, "and this should result in additional sales in 1950. The company's cobalt is sold principally overseas either as oxide or salts, produced at the Clydach, Wales, refinery."

The company's sales of precious metals are increasing. Sales of the platinum group metals totaled 214,735 oz in 1949, up from 199,560 oz the year before. Selenium deliveries in 1949 were 117,636 lb, compared with 103,687 lb in 1948. Sales of tellurium were 9,191 lb, a drop from 12,608 lb in 1948.

Precious Metals Upswing

"Sales of nickel have exceeded 200 million lb in each of the past 10 years," Mr. Stanley said. "In view of this heavy consumption of ore, expenses for prospecting for new ore bodies have become costly. Intensified exploration in 1949 cost $1,554,000, compared with $1,057,000 in 1948. The company's proven ore reserves stood at 251,805,000 short tons at the end of the year, up 5.6 million tons since the end of 1948."

In the effort to achieve maximum recovery from the company's ores, methods are under study to permit the production of high grade byproduct iron ore.

Consolidated Can Reports Profit

New York — Consolidated Can Co. and subsidiaries posted net earnings of $12,674,968 for the year ending Mar. 31 as compared with $13,021,355 for the previous year, said Hans A. Eggerss, president, at the annual stockholders' meeting.

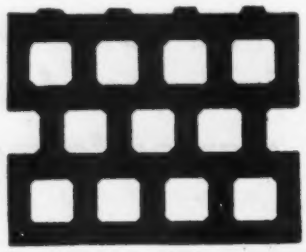
Noting that the company's business was now at a seasonal level and could not serve as a barometer for future volume, Mr. Eggerss reported first quarter sales of $69,502,243 in '50 against $61,226,298 last year.

Plans Water Power Project

Washington — Application has been filed with the Federal Power Commission by the Niagara Mohawk Power Corp. for permission to construct a hydroelectric project on the Sacandaga River, Saratoga County, New York.

Costing $5.6 million, it would include a 1650-ft dam, spillway, and a 30,000-kw generating plant with related equipment.

Perforated metal screens *for any requirement*



WITH facilities for producing any shape and size of perforations in any commercially rolled metal, of whatever gauge desired, Hendrick can furnish the most suitable form for a specific screening application.

To best meet certain requirements, Hendrick developed the "squaround" perforation illustrated. Other standard forms include round, square, hexagonal, diamond and slot perforations in hundreds of sizes of openings. Write for full information.

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"Shur-Site" Treads and
Armorgrids

Time, Motion Study Benefits Told to SKF Workers in Booklet

New York—By some backroad of reasoning the time and motion study engineer has been regarded as the arch-enemy of the workman. Suspicion and resentment have been directed at him by the man in overalls who sullenly controlled his temper at attempts to measure the twiddle of a finger and the jerk of a wrist. This study, the employee reasoned, is a tyrannical measure to set a definite time for a job's accomplishment so that the boss will know when he has worked too slowly and has perhaps goofed-off.

Goes to Workers

SKF Industries, Inc., recently published a 16-page booklet to foster wider employee understanding of time and motion study. It has been distributed by the ball and roller bearing firm to its workers and explains the benefits of time study to both company and worker.

Entitled "Why Time Study," and written by John R. Listman, Supervisor of Standards, the booklet in bantering style relates that time study fixes costs, keeps a firm in competition, and keeps people working.

Jobs are simpler because unnecessary motions are eliminated, fatigue is reduced, and mechanical aids are introduced into production to benefit the worker. the booklet states.

Cost-Cutting Tours Held

Greenwich, Conn.—Connecticut manufacturers entered into the spirit of the American Society of Tool Engineers' nation-wide cooperative program to cut costs in manufacturing. They met on May 4 for tours to major plants in Greenwich, Stamford, and Darien, sponsored by the New Haven, Fairfield, and Hartford chapters of the ASTE. The program sought to promote the maximum interchange of industrial information in the shortest time possible.

EF

Easier HEAT TREATMENT of LARGE, HEAVY CASTINGS

• The gantry crane shown with this battery of EF batch type furnaces picks up castings from a receiving platform — loads them into the furnaces — removes them after heating — lowers them into the quench — removes them after quenching and places them on an unloading platform.

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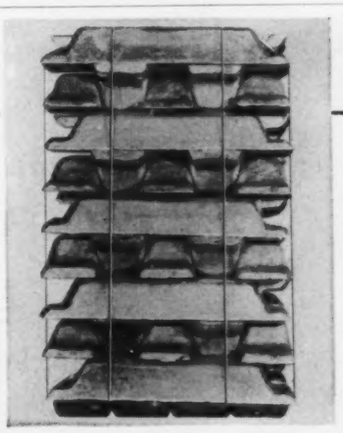
Salem - Ohio

Self-palletized bundle of aluminum pigs eliminates cost or inconvenience of returning pallets. Gerrard Round Steel Strapping holds bundle firm and secure, is galvanized to resist corrosion.



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THERE's a Gerrard machine and size of strap to help you improve your tying procedures. The Gerrard method of strapping gives added protection and security to small parcel post packages, heavy pallets, and carload lots of steel pipe, plate and tinplate.

And Gerrard Strapping costs about 40% less than any other type of metal reinforcement.

Ask a Gerrard engineer. He is equipped to give you expert advice and the facts about the Gerrard method of strapping. His services are available free of charge. Write for a free copy of the *Blue Book of Packaging*.

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Carpenter 20

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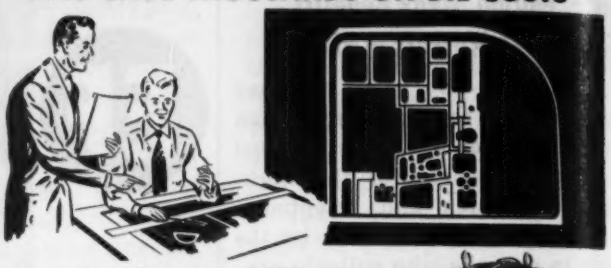

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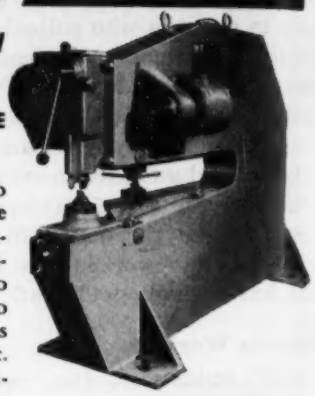

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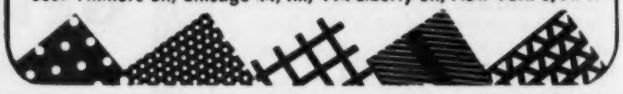

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STEEL • BRASS • STAINLESS • ALUMINUM
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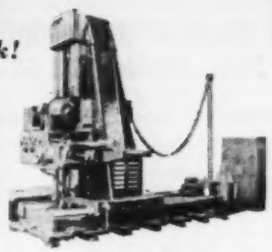

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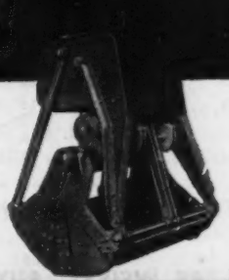

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Item	Tons	Size	Quality
1.	85	¾" Rd. x 25'-30'	*
2.	8	⅞" Rd. x 25'-30'	*
3.	16	1" Rd. x 25'-30'	*
4.	17	1⅛" Sq. x 25'-30'	*
5.	18	1¼" Sq. x 25'-30'	*

* 10% shorts to 15'

HOT ROLLED ANGLES

6.	125	1" x1" x⅛"x16'-20'	.30/.50 Carbon
7.	50	1" x1" x⅛"x16'-20'	.30/.40 Carbon
8.	35	1¼"x1¼"x⅛"x20'	.30/.40 Carbon
9.	11	1¼"x1¼"x⅛"x20'	.40/.50 Carbon
10.	26	1¼"x1¼"x⅛"x16'-20'	Mild
11.	10	1½"x1½"x¼"x16'-20'	Rail
12.	11	2" x2" x¼"x16'-20'	Mild
13.	19	4" x3" x¼"x60'	Mild

HOT ROLLED STRUCTURAL CHANNELS

14.	20	3" x 4.1# x 20'
15.	14	4" x 5.4# x 20'

HOT ROLLED MILD STEEL PLATES

16.	40	3/16" x 48" x 144"
17.	89	3/16" x 72" x 240"
18.	27	5 ga. x 48" x 112½"
19.	25	¼" x 60" x 144"
20.	200	9/32" x 54" x 240"

HOT ROLLED MILD STEEL FLATS

21.	15	⅜" x 3½" x 16'-20'
22.	60	½" x 2" x 16'
23.	10	½" x 2½" x 18'
24.	8	½" x 3¾" x 20'
25.	7	½" x 4" x 16'

HOT ROLLED BARS

26.	5	1⅜" Rd. x 16'-20'	C-1020
27.	10	1½" Rd. x 16'-20'	C-1018
28.	10	2" Rd. x 16'-20'	C-1018
29	5	2" Rd. x 14'-18'	C-1035
30.	56	2-7/16" Rd. x 18'-20'	A-4027
31.	13	2⅞" Rd. x 13'11"	C-1030

For brevity refer to Item No.

"BE WEISS — BUY WEISS"

THE CLEARING HOUSE

NEWS OF USED, REBUILT AND SURPLUS MACHINERY

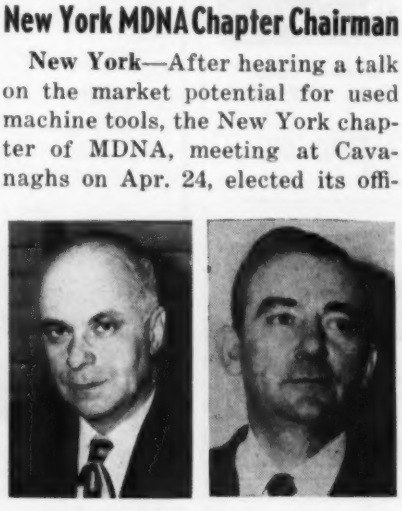
New York MDNA elects officers; makes plans for next convention

NISA chapter hears talk on "What Makes This Country Prosper"

Demand rises sharply for universal milling machines in Pittsburgh

Weisbecker Succeeds Schill As New York MDNA Chapter Chairman

New York—After hearing a talk on the market potential for used machine tools, the New York chapter of MDNA, meeting at Cavanaghs on Apr. 24, elected its officers for the 1950-1951 period. Alfred J. Weisbecker of Rosencranz, Weisbecker Co. succeeds Ed Schill as chairman of the group. Alex Zeeve Jr. of Alex Zeeve & Co. was elected vice-chairman and R. Douglas Williams of Williams Machinery Co. was elected secretary.



Alfred J. Weisbecker, left, succeeds Ed Schill, right, as chairman of the New York MDNA group for 1950-1951.

The New York chapter then made plans to attend the Detroit convention and went on record, along with the Philadelphia group, as recommending to the national headquarters that the 1951 convention be held in Asbury Park at the Berkley Carteret hotel.

The group also instructed the chairman of the nominating committee that it had chosen the following members as candidates for the national MDNA board of directors for 1950-1951: Ed Schill, Alex Zeeve, Jr., and Richard Nathans.

King Coal NISA Holds Election; Has Talk on American Prosperity

Evansville, Ind.—Jerry Link of the Dowzer Electric Machinery Works, Mt. Vernon, Ill., spoke on the topic of: "What Makes This Country Prosper," at the Apr. 13 meeting of the King Coal chapter of the National Industrial Service Assn. C. J. Covington, presiding officer, conducted the business meeting which included the election of officers. Charles I. Williams of Swanson-Nunn Electric Co., Evansville, Ind., was elected president, O. D. Whitfield of Whitfield Electric Co., Inc., Madisonville, Ky., was elected vice-president, and William H. Sander of Sander Electric Co., West Frankfort, Ill., was elected secretary-treasurer.

Milling Machine Demand Rises Sharply in Pittsburgh

Pittsburgh — Indicative of the sharp peaks and valleys in demand for a given piece of equipment is the recent sudden interest in universal milling machines in the Pittsburgh area. Everybody's looking for milling machines. One dealer said it's reached the point where it takes a lot of looking to find them. Up until ten days ago milling machines were a drug on the market as they have been for something like two years. Some observers were inclined to believe the demand reflected an increase in government business.

Otherwise demand for used and

Turn to Page 148

AARON FOR RELIABILITY

AUTOMATICS
Brown & Sharpe #00G, H.S. #4 & 6
Brown & Sharpe #2G, 1½" cap.
Cosmatic 8 sp. 1⅞" cap.
New Britain Gridley 6i—2¼" 6 sp.
Coco ⅝" Swiss type

BORING MILLS
Giddings & Lewis #6, #25T
Lucas #31 horiz.
Universal 3" horiz. equipped
Bullard 42" V.T.L.

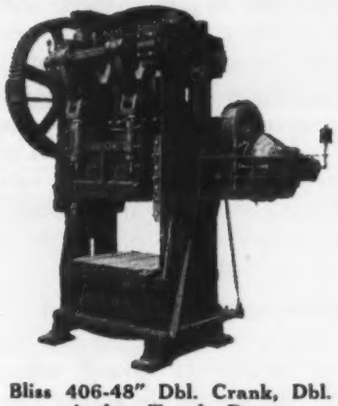
DRILLS AND RADIALS
Allen 6 spindle
Cincl-Bickford Sup. Ser. 21"
Royersford Excelsior 21"
Canedy-Otto 3'-9" col.
Carlton 8'-19" col.
Sibley 24" & 28"

ENGRAVERS
Gorton #3U, 2 dimensional
Gorton Cutter Grinders 375-2, 265-6
Deckel GKI 3 Dimensional

GEAR EQUIPMENT
Barber-Colman #3 Hobbers (3)
Gleason 3" Generator
Hamilton Hobber
Fellows 645Y, #7, #72, #725 High Speed Shapers
Mikron Gear Hobber
Fellows, Michigan, Gleason Checkers

GRINDERS, MISCELLANEOUS
Brown & Sharpe #5 cyl., 3" x 18"
Brown & Sharpe #1, #2, #3 Univ. #13 Tool
Cincinnati #2 Centerless Filmatic, 12 x 36 Univ.
Cincinnati #2 Tool & Cutter, univ.
Cinn. 12 x 48" Univ., Gardner #226, 30" disc.
Covel #91A Univ. Tool & Cutter, Hammond #4
Heald 72A3 Int. Centerless Sizematic, #1 Tool
J. & L. TG636 Thread Grinder
Landis #4H Cyl. 4x12", Centerless, #6 Thread
Norton #2 Tool & Cutter, Type C, 6x36"
Oliver #510 Drill Pointer, Sellers 4G, Blank D'mond
Pratt & Whitney Radius #R6, K.O. Lee Tool
Porter Cable Belt WG8, G8; Gremby Int.

GRINDERS, SURFACE
Abrasive #3B, 8x24", #33, #34 Vert.
Blanchard #16, 30" Mag. Chuck, #11—16" chuck
Brown & Sharpe #2
G. & L. #25, #35 Hyd. Feed, 6 x 18, 8 x 24



Bliss 406-48" Dbl. Crank, Dbl. Action Toggle Press

Hanshett 300 series, 13x48" with chuck, Hammond #2
Norton 6x18" Hyd., Atlantic 6x18" Power Feed
Reid #2A P.F. MIB., #2C Pope Spdl.
Pratt & Whitney 12x36" Vert.
Thompson Hyd. 6x10x19", 6x12x18"

LATHES
Hardinge Precision 9", 1" Collet Cap., Rivett
Hendey G.H., 16x30", Rel. Att. Bradford 14"x8'
LeBlond Regal 15x30", 21x60", 10"x3½', 19x48"
LeBlond Heavy Duty 16x33"
Lodge & Shipley 16x76" T.A., Collets, etc.
Monarch 10"x20" EE, 16x78 G.H., 12x30"
Sebastian 12"x4' G.H.
Sheldon 11"x24", Logan 10"x30"
South Bend 13x36", 14½"x6', 10x4, 9x3, 9x3½

MILLS, PLAIN, UNIVERSAL & PROD.
Brown & Sharpe #000, 12, 2I, #2A Univ., 2B PL.
Burke #4 Plain & Univ. Vert. Hd.
Cincinnati 2MH Univ.—I-12, I-18, 2-18 Mfg.
Kent Owens #1V; U.S. Hand Mills
Milwaukee #2HL, 2H Univ., 2H Plain
U. S. Multimiller
Sundstrand 00 Rigidmill; Whitney Hand Mills
Van Norman #12, 22L, 36; U. S. 1 & 2 sp.

MILLS, VERTICAL
Bridgeport Vert. Slotter, Hor. Sp.
Brown & Sharpe #2
Cincinnati #4
Foodick Jig Borer #42A, HD. Equipped
Gorton #8D, 9J Plain, 8½D Duplicator
Sip Jig Borer #MP-5
Index, Jackson, Vernon
Milwaukee 3H, H.S.D.T.
Morey #12M Profiler 2 sp., P. & W. 12B

PRESSES
Bliss 675, 850, 845B Hi-Production Presses
Bliss #8 Dbl. Crank, Bed 42"x90"
Bliss 19, 20, 2I OBI, 58, 62, 62A, 102 OB.
Bliss #4½ Double Action, Roll Feeds

HYDRAULIC EQUIPMENT

Cap.	Manufacturer	Platen	Stroke	Opening
550	Southwark	42x32"	28"	60"
500 Ton	Lake Erie	35x36"	34"	66"
600	Bald.S'thw'k	78x59"	22"	59"
500 D.A.	H.P.M. (160 Cushion)	36x36"	24"	50"
300	Brand New Watson Stillman Hobbing Press			
50	Dennison	22x20	18	23
150	Southwark	84x30	30	2' to 4'

UP MOVING RAM PRESSES

150 and 100 Ton Stokes Molding Presses & Pumps
300 Ton Dunning & Boschert Molding Press
500, 800 Ton Waterbury-Farrel 3 & 4 Rod Presses, 6 & 6½ strokes
300 Ton Watson Stillman Press, 24x20" Platens
500 Ton Shaft Straighteners—Self Contained

All Hydraulic Equipment is completely engineered and checked by a competent staff, thus assuring reliability. Send us your Hydraulic problems.

NEW IN STOCK
Air Hydraulic Presses—Arbor Presses #6C Famco—Band Saws Kalamazoo—Drill Presses all sizes—Hydraulic Press Northern 20 Ton—Injection Molders, 1 ounce—Power Presses, OBI, 4½, 5, 7½, 10, 12, 18, 30 ton—Shaper, 7" Ames, 8" Shaperite—Shaper, Sheldon 12"—Shears, Foot 22" to 8', 16 & 18 ga.—Shears, Power, 3'x18 gauge to 10'x19 ga.—Welders, Arc, Seam, Spot all sizes—Vert. Milling Attach. Halco H.S.—Motors, Grinders, Buffers, all sizes.

Henry & Wright 75 Ton Dieing, 25 Ton
Z & H 30 Ton OBI
Toledo 400 Ton Knuckle Joint
V. & O. #102 O.B.I. Reducing

TURRET LATHES
Acme #6W Bar & Chuck, Acme 6W Fox, 4W
Bardons & Oliver #3, 1½" cap., #5, 2" cap.
Brown & Sharpe #1, 2F, Hand
Gisholt #4, 5 Bar & Chuck, 1L, Foster #3B
Hardinge ESM Second Operation
J. & L. 8A—Well Tooled
Oster #60i Rapiduction, well tooled
Warner & Swasey #5, 4, 3, Universal
Warner & Swasey #4A, 3" cap. Power Chucks (2)

MISCELLANEOUS
Band Saw; Tannewitz #36M, DoAll ML, V16
Bending Roll; Buffalo #0, ½WR, Excelsior #14
Broach; American Horiz. Hyd. Model H-15-60
Hacksaw; Marvel 6A Automatic #6
Hardness Tester; Clark
Hone; Micromatic #H-1, Sunnen
Keyseater; Davis, Baker, M & M
Riveters; Hi Speed
Router; Osgrud #W240, 55
Saws: Wells, Catskill, Peerless, Kalamazoo
Slotter: P. & W. 6" Vert. Shaper
Shaper; 8" Shaperite, 7" Atlas
Shear: Pexto 9'x14 Ga.
Tappers; Bakewell #1, Haskins #2C, 3C
Welders; Seam & Spot; Thompson, Taylor-Winfield, Sciaky

This is but a partial listing. Write for free Catalog. Inquiries invited.

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36-90 Cincinnati Hydromatic DUPLEX Miller
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#33 Lucas 4½" Horizontal Boring Mill
14" x 54" Monarch 16-speed Engine Lathe
14" Gould & Eberhardt Tool Room Shaper

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LATHE—BRIDGEFORD, 32" x 21' C. to C. (old)
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PLANER—GRAY, 60" x 60" x 40' (Tolerance .003)
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SHEAR—R. D. Wood, 7" x 1", 18" gap

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PLAZA 7-3471

2—MATTISON HIGH POWERED PRECISION SURFACE GRINDER: 24"x24"x120". Automatic down Feed and Stop 50 HP Built in Spindle motor, 10 HP Hydraulic Pump Motor, 1½ HP Hoist Motor ¼ HP Coolant Motor Mfr. Serial #14075 and #14076. Condition Like New.

2—CINCINNATI HYDROMATIC MILLING MACHINE: #56-96. Motor Drive, Table length 126⅜", Working surface 113"; Table Travel 96", Table width 24", center of spindle to table 19" maximum, 5¾" minimum. Excellent Condition.

ADDRESS BOX R-590
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#18 GLEASON HYPOID GEAR GRINDERS
(5) #18 GLEASON FORMATE HYPOID GEAR GRINDERS. Largest Pitch Diameter 24", Longest Cone Dia. with 12" Wheel 12⅞"
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60" x 20' NILES BEMENT POND 24 Speed Geared Head Lathe, taper, steady rest, excellent condition.

48" x 30' NILES Heavy Duty Geared Head Lathe, new 1940.

2L GISHOLT Turret Lathe, new 1942, Pre-selector Head, bar feed, collets, hardened ways, taper attach., AC motor. Price $5,850.00.

100" SELLERS Vertical Boring Mill, 2 swivel heads, rapid traverse, Motor Drive, New 1935.

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THE CLEARING HOUSE

AIR COMPRESSOR

1000 Cu. Ft. Worthington "Feather Valve," 18" x 11" x 14" two stage with 185 HP synchronous motor on shaft.

AUTOMATIC

4⅜" Conomatic 4 spindle, serial No. 2191K with, reel, chip conveyor, extra equipment.

BORING MILLS

4½ bar Lucas No. 33. Table 46" x 64" Max. height 36", Max. to outboard support 11'.

100" Niles Bement Pond. Extra heavy type. 2 swivel heads, power rapid traverse, 35 HP direct current motor.

BROACH

15 ton 36" stroke American vertical duplex surface with tilting type workholder.

DRILL

42 spindle, No. B16 Natco multiple with 18" x 48" drilling area and two box tables.

GEAR HOBBER

Type T Barber Colman. Designed for either straight or taper splines, helical or spur gears. Also type A and Nos. 3 & 12 Barber Colmans.

GRINDERS

6" x 18", No. 10 Brown & Sharpe "Electric Hydraulic" Three with and two without spindle oscillation. New 1940 and 1941.

10" x 36" Norton type C hydraulic with hydraulic quick in-feed. Serial No. C16458, new in 1942.

10" x 72" Norton type C hydraulic made at factory to swing 14". Serial No. 21750, new in 1944.

23" x 36" Norton type C with mechanical table traverse, hydraulic quick in-feed. Serial No. C18281, new 1943.

LATHE TURRET

No. 2FU Foster Fastermatic Serial No. 2FU529, new in 1944. Quite a little tooling.

MILLERS

Cincinnati Hydromatic Sizes: 3-24, 34-36, 4-36, 4-48, 5-48, 56-72 and 56-90.

PRESSES

1000 ton, No. 666 Toledo knuckle joint Coining. 2½" stroke, 18" shut height, bed 37" F to B x 31" R to L.

350 ton Clearing Crankless, model F1350-42, serial No. 45-11155P, new 1945. 20" stroke, 28" shut height, 36" x 42" bed.

600 ton Hamilton No. 2316½ eccentric shaft forging. Stroke 4"; shut height 16" bed 28" F to B x 23¾" R to L.

No. 506 Bliss on inclined legs with double roll feed and scrap cutter. About 126 tons. 3" stroke, 11½" shut height.

1000 ton Baldwin Southwark "Hy-Speed" hydraulic. 20" stroke, 56" daylight, bed 42" F to B x 54" R to L.

UPSETTERS

2" National. Serial No. 13213. Has suspended slides with long overarm guide. Has 15 HP motor.

4" Ajax. Serial No. 3156. Has twin drive gears, suspended slides, self contained backshaft, 30 HP motor.

MILES MACHINERY CO.
SAGINAW, MICH.

Continued from Page 144

rebuilt equipment here is reported mixed. Some dealers find themselves confused and disappointed about the way business is going, particularly in machine tools which have recently fallen off.

A bright spot in the picture, however, is the demand for steel mill equipment. Inquiries and deals closed add up to a good volume of business. This applies both to domestic and foreign, and the outlook is good.

Business Back to Normal

Dealers classify current business as poor to *normal*, meaning that the market is acting like it did before the war. One dealer reported a diversity of inquiries, the majority of them for equipment needed in home building, such as presses, shears, brakes and the like. Unfortunately even this demand appears to be pretty well satisfied. What buying is being done today is for the most part by the big steel companies, according to a prominent dealer.

Two machine tool companies reported that inquiries have slowed up noticeably in the last month. This was disappointing, because they were counting on an upturn with the end of the coal strike. There is some interest in shears and sheet metal equipment.

Prices are maintaining a fairly even keel. Prospects are quick to spot a quotation that appears to be out of line with the market. By the same token they are not trying to beat down a price that is reasonable.

NISA Covers Friction Proofing

Los Angeles—The Los Angeles chapter of the National Industrial Service Assn. held a local meeting on Apr. 19 in this city. Bill Hill, chapter chairman, introduced Mr. Berger of Hill Electric Co. who spoke on the topic of how to friction proof motors and driven equipment through use of Wynn's friction proofing oil. Chairman Hill announced the appointment of Earl Sweinhart of Sweinhart Electric Co. as chairman of the membership committee.

Resume Your Reading on Page 145

5" UPSETTERS

5" National High Duty Upsetting & Forg. Mach. Air friction clutch; side shear; auto. lubricating system; jib crane; 60 H.P. motor; V-belt drive

5" Ajax Heavy Duty Air Friction Clutch Upsetter; underarm header and grip slide; jib crane; 40 H.P. motor; V-belt drive

Upsetting & Forg. Machs., National High Duty, guided overarm heading slide, suspended slides, 1½", 2", 3", 4", 5"

Ajax & Acme Upsetting & Forg. Machs., not suspended slides, ¾", 1", 1½", 2½", 3"

W. W. Bulldozers, #22, #4, #24, #5, #8

Drop Hammers, 800# to 2500#

Nazel Air Forg. Hammer, #6B, Cap. 7" sq.

Bradley Hammers, Cushioned Helve, Upright & Compact

Trimming Presses, #59¼ Toledo, Tie Rod, 440-tons; other trimmers 55 to 200-ton

Bar Shears, Open & Guillotine, ⅝" to 7" Rd.

Minster 88-ton O.B.I. Press

Minster 88-ton S.S. Press, 16" stroke

Solid Back Presses, 20 to 100-ton

#94-A Toledo S.S. Double Crank, Tie Rod Press; bolster 40x36"

Bliss Knuckle Joint Press, 250-ton

Cleveland EF Sgl. End Punch, 48" throat, 1¼" thru 1"

Single & Double End Punches, various throat depths and caps.

L. & A. Multiple Punch, 8', 150-ton

L. & A. Multiple Punch, 10', 350-ton

Ryerson Serpentine Throatless Shear, ½"

#416-C Niagara Circle & Slitting Shear, ¼"

Flanging Machine, McCabe, cap. ¾"

Bertsch Straightening Roll, 1"x68"

Ryerson Friction Saws, #0, #1 & #3

Landis Threading Machine, 1", 2-Sp. lead screw, Lanco Hds., M.D., single up to 4"

BOLT, NUT AND RIVET MACHINERY, COLD HEADERS, COLD BOLT TRIMMERS, THREAD ROLLERS, SLOTTERS, HOT HEADERS AND TRIMMERS, COLD AND HOT PUNCH NUT MACHINES, POINTERS, THREADERS, WOOD SCREW EQUIPMENT.

Diamond Face Grinder, Segment Wheel 36", Table 84"x24", Hydraulic operated

Landis Motor Driven Pipe Threader, 8"

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ALLEN TYPE KH DRILLS

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#2 Morse Taper, ¾" Drilling Capacity. Hand Feed to Spindle. 1942 MODELS PRACTICALLY NEW
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